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PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

Better Service for the Car Riders

No. 1 **January, 1922**

During 1921 statements were issued for the purpose of stimulating the spirit of co-operation upon this railway through a knowledge of the vital facts and the progress made from month to month. The spirit of co-operation and personal interest in the service rendered has reached a point where these statements ought to be made of greater value and of broader scope. During 1922, therefore, a larger bulletin will be issued with the hope that the degree of co-operation may constantly increase.

Revenue for December, 1921, exceeded expenses by $330,762.27. On January 1, 1921, there was an outstanding deficit of $805,959.38, and on January 1, 1922, this deficit has been completely absorbed and in addition to this $311,661.95 restored to the reserve fund.

This would have been impossible if there had not existed real co-operation to accomplish this result.

New Shops

Many employes have no idea of the great need for modern repair shops in order that the rolling stock may be efficiently and economically maintained in good operating condition. The Bartlett Street Shops are known chiefly to those engaged at that location. It is sufficient to state these buildings were converted in 1890 from stables and horse car shops to shops for the repair of electric cars of an entirely different character than those operated upon this system today. Better days are coming and it is confidently expected that during 1922 work will actually be started on the construction of modern, fireproof, roomy, well-lighted and well-arranged central repair shops at Everett. The cut gives an idea of the appearance and the importance of a plant which when entirely completed will be up to date in every detail and cost several millions of dollars.

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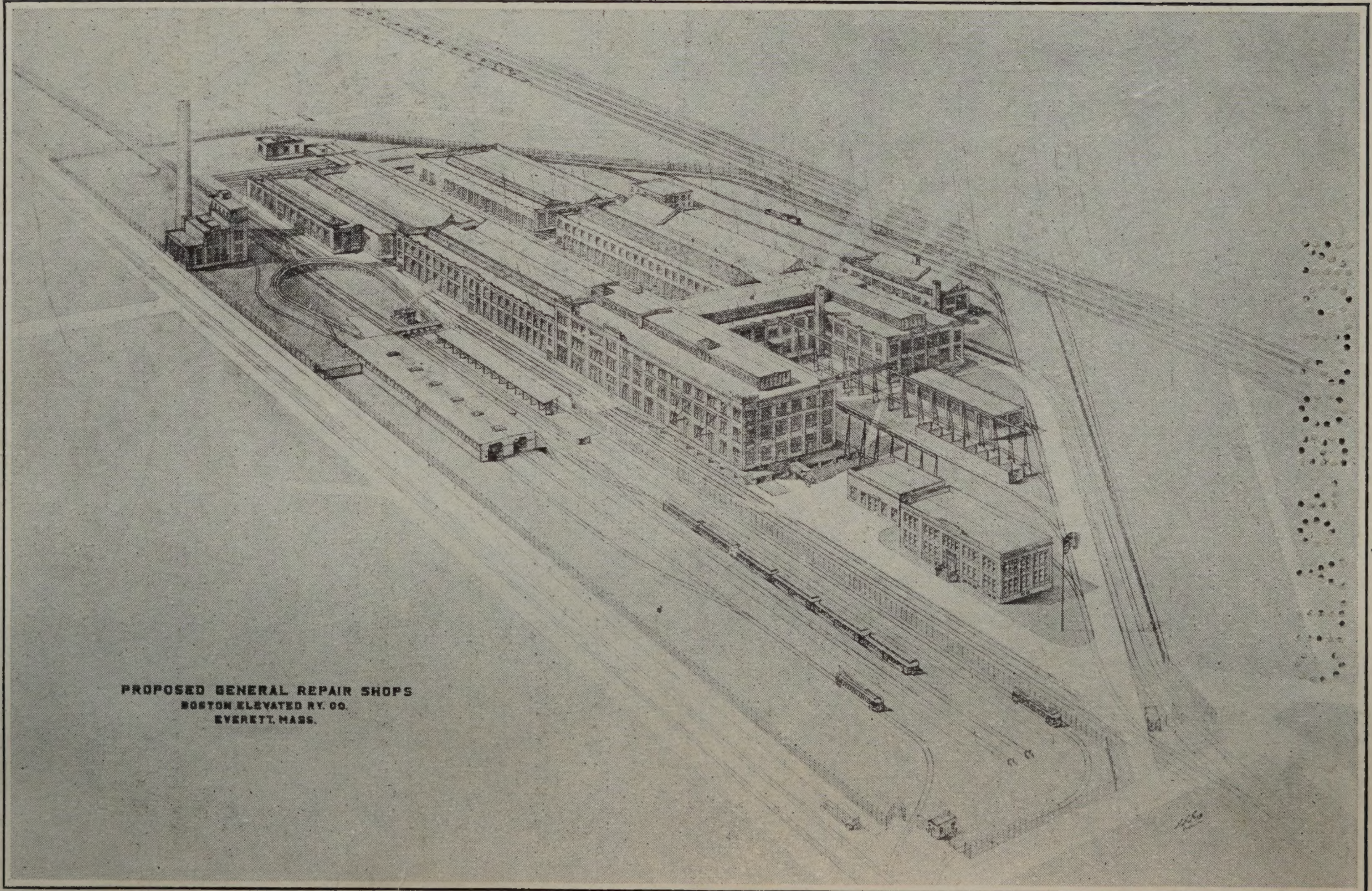

PROPOSED GENERAL REPAIR SHOPS
BOSTON ELEVATED RY. CO.
EVERETT, MASS.

New Steel Elevated Cars

The new steel elevated cars are going in to service each week. There are 65 ordered and 38 are already in operation. These cars cost $19,000 each, or a total of $1,235,000. They replace wooden cars placed in operation when the elevated lines were first constructed in 1901, which cost at that time only $11,000 each. When these cars are all in service there will have been placed in operation by the Trustees since July 1, 1918, 535 new cars, certainly a substantial improvement in service in a brief period of time. The improvement in the character of service rendered by the men operating them, has been indicated by the numerous letters on file at the main office.

Is Real Service Appreciated

December 25, 1921.

Mr. Edward Dana,
Boston Elevated Railway Co.
Dear Sir:

Being a passenger several times on the ———————— line, would say that I have had the pleasure of riding on different occasions with Conductor ———, and could not help but notice the kindness, courtesy, and good-will shown by this Conductor to the young, old, crippled and mothers with children, let alone the interest taken by him in the public in general. I have noticed a sign in the street cars asking the public to report any discourteous acts, as well as any kind or courteous acts, upon the part of any employes of the Company.

I have heard other passengers pass remarks in regard to the good-will and kindness shown by this very same Conductor, and really think that he is a fitting example of what a public servant should be.

I write this letter as a perfect stranger to the man.

Yours respectfully

(Above is typical of many similar letters received by the management.)

Safety First

The accident record for 1921 was gratifying. Safety of patrons as well as employes must be emphasized in the minds of everyone in the railway all of the time. Accidents are not always the result of carelessness, but accidents resulting from carelessness need not and should not occur. Think of safety when you first go to work in the morning. It will help tone up the entire day's work.

The Answer Is Yes

Is the street railway the fifth industry in the United States?

Are there 300,000 men engaged in street railway operation?

Is the investment in street railways six billions of dollars?

Does the street railway handle twelve times as many passengers as all the steam railroads of the country or fifteen billion passengers a year?

Full many a gem of purest ray serene
  The dark unfathomed caves of ocean bear;
Full many a flower is born to blush unseen
  And waste its sweetness on the desert air.

THOMAS GRAY.

The beauty of the lines of Gray's Elegy are well known.

Did you ever stop to think that your ability cannot remain unseen if you develop it and display it and prove what is in you?

EDWARD DANA,
General Manager.

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PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

Better Service for the Car Riders

No. 3 **March, 1922**

Revenue during February exceeded expenses by $40,595.50, and on March first the reserve fund was restored to the amount of $715,530.99. A total of 27,144,273 revenue passengers were carried, which was an increase of 1,022,574 over last year. Of this number, 5,266,878 were five-cent passengers.

Power

Plans are progressing for the addition of two 1800 horse-power boilers at the South Boston power station during this year in preparation for the power demand of next winter. When this improvement is completed, it will make possible the carrying of a maximum load of 70,000 kilowatts at this station and permit a greater use of the station where today it is not possible to use all generators at the same time.

Of the total investment in the railway property amounting to $95,000,000, exclusive of investment in subways and tunnels, the complete power plant amounts to $21,697,293.74, divided as follows:

Poles and fixtures	$712,637.78
Underground conduit	1,583,824.03
Distribution system	3,952,011.38
Wharves and docks	220,744.71
Power plant buildings	4,978,408.61
Sub-station buildings	478,902.48
Power plant equipment	7,318,478.07
Sub-station equipment	1,504,427.85
Transmission system	947,858.83
	$21,697,293.74

It is not always appreciated what an important feature the power plant is nor the huge sums represented in order to provide current for motive power, light and heat. During the year 1921, the cost of operating the power plant was $2,532,500.73, or 11% of the total operating expenses of the railway.

215,870 tons of coal were burned, the lowest for a great many years.

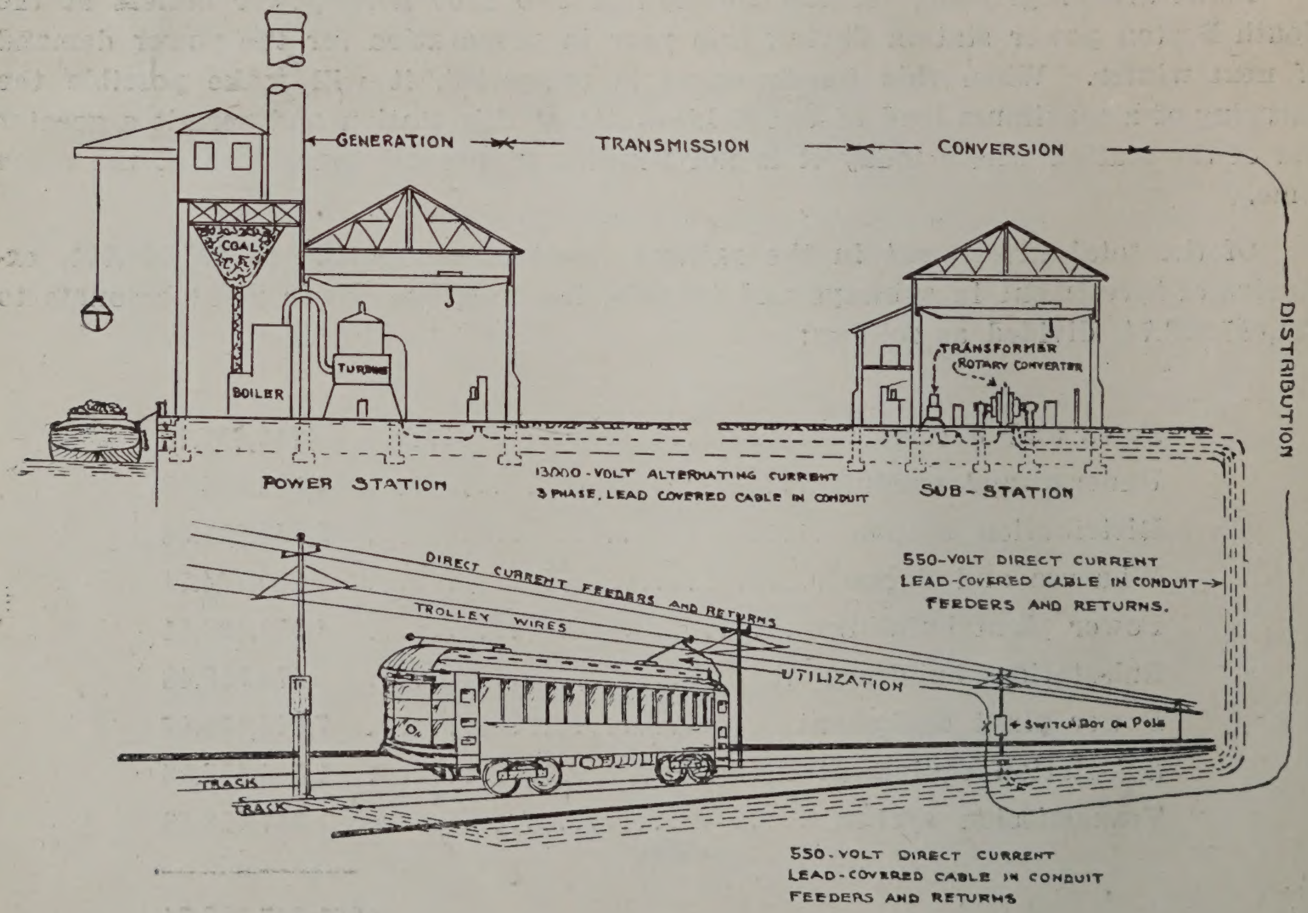
29,836 gallons of lubricants and oil were used in this machinery, as compared with 46,396 gallons the year previous.

The total kilowatt hours of electricity which were generated was 223,061,330.

While it is impossible to translate this energy exactly into animal horse power, it is interesting to know the approximate number of horses which would be required to perform the same amount of work. Assuming ten miles per day as an average day's work for a pair of horses when hauling old type horse cars weighing five tons loaded, the ton miles per year per horse would be 9,125.

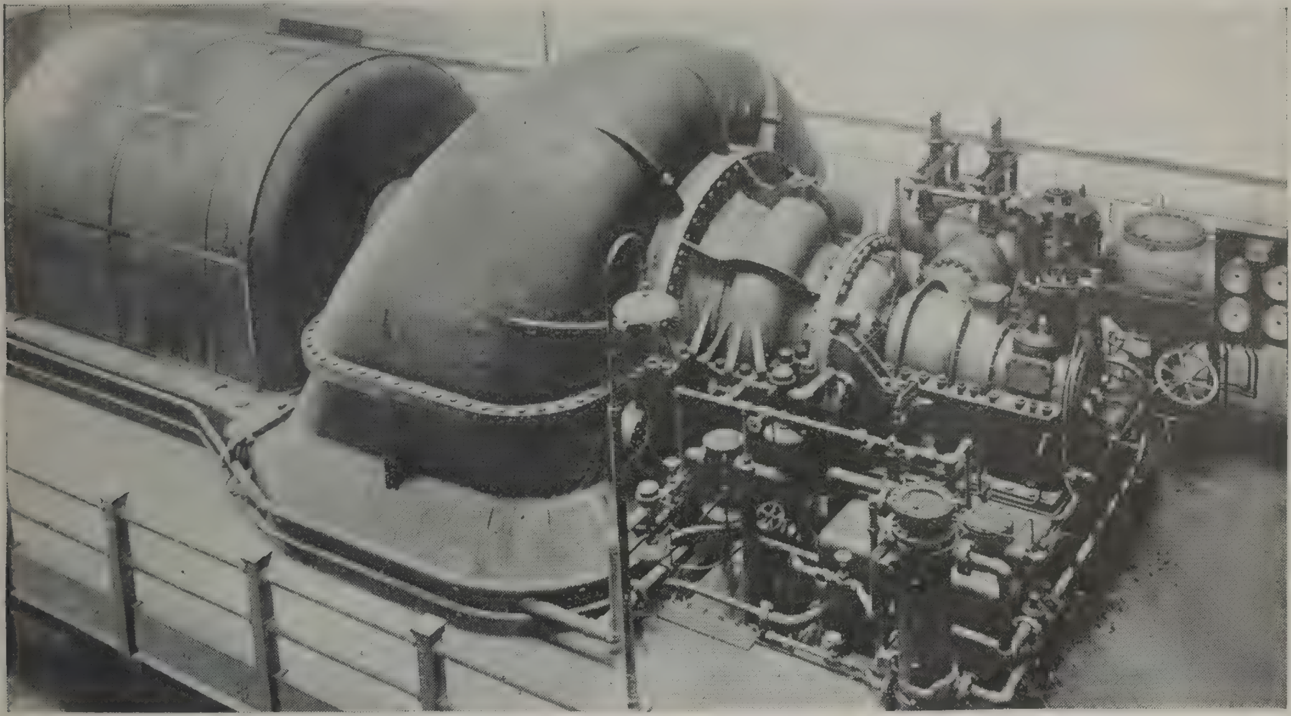
The ton miles operated during 1921, including weight of car and passengers, were 1,390,125,686. The number of horses required, therefore, would be 152,342 plus an additional 10% for spares, tows, etc., or a total of 167,576. This, of course, does not take into consideration the difference in rate of speed.

The printed diagram indicates the present method of street railway transportation by electricity, and while but a simple sketch when considered in connection with the figures quoted, offers an opportunity to visualize the magnitude of the power problem.



Our Big Generator

The cut below is the 35,000 kilowatt turbine generator at South Boston Power Station, which many employes have never seen, and which is being rebuilt and converted into a 40,000 kilowatt unit. During a great part of the year in the off-peak hours this single machine "carries the load" of the entire system, and occupies floor space of only 45 feet 6 inches by 20 feet, is 12 feet high and weighs 430 tons. Petty difficulties somehow disappear in the presence of concentrated energy of such magnitude.



Courtesy

The contact of employes with the public at all times should be such as to bring credit to themselves and this railway. Distressing instances have come to light where individuals have not held their end up in the effort to make 1922 a record year for service to the car riders.

The Boston Elevated of the Future

What railway do we wish known throughout the United States as the one upon which men and management are co-operating and giving their best to the public service? The railway in Boston operated by the Commonwealth. Keep striving.

Co-operation

Co-operation means securing all the revenue, avoiding accidents, being courteous and considerate of car riders, helping one another, conserving supplies and materials, not wasting time, and doing it every day all of the time.

Game Fish Swim Up Stream

It's easy to drift as the current flows,
It's easy to move as the deep tide goes;
But the answer comes when the breakers crash
And strike the soul with a bitter lash—
Where the goal ahead is endless fight
Through a sunless day and a starless night;
Where the far call breaks on the sleeper's dream,
"Only the game fish swims up stream."

The spirit wanes where it knows no load;
The soul turns soft down the Easy Road;
There's fun enough in the thrill and throb,
But life in the main is an uphill job;
And it's better so, where the softer game
Leaves too much fat on a weakened frame,
Where the far call breaks on the sleeper's dream,
"Only the game fish swims up stream."

When the clouds bank in—and the soul turns blue—
When Fate holds fast, and you can't break through—
When trouble sweeps like a tidal wave,
And Hope is a ghost by an open grave,
You have reached the test in a frame of mind
Where only the quitters fall behind,
Where the far call breaks on the sleeper's dream,
"Only the game fish swims up stream."

—Unknown Author.

Good thoughts on an uphill climb for those engaged in a public service.

EDWARD DANA,
General Manager.

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PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

Better Service for the Car Riders

No. 4

April, 1922

		1922	1921
Total Receipts	March	$2,868,518.15	$2,991,780.71
Total Cost of Service	March	2,664,186.07	2,790,932.51
Excess of Receipts over Cost of Service		$204,332.08	$200,848.20

The reserve fund required by law has on April 1st been restored to the amount of $919,863.07.

Revenue Passengers

	MARCH			
	1922	%	1921	%
10c passengers	24,758,710	80.16	28,548,059	96.14
5c passengers	6,130,322	19.84	1,147,316	3.86
Total passengers	30,889,032	100.00	29,695,375	100.00

◆ ◆ ◆

Today

Think not on yesterday, nor trouble borrow
On what may be in store for you tomorrow,
But let Today be your incessant care.
The past is past. Tomorrow's in the air.
Who gives Today the best that in him lies
Will find the road that leads to clearer skies.
—JOHN KENDRICK BANGS.

Forest Hills Elevated Inspection Shop

Steel has been ordered and the contract signed for the construction of the inspection shop for elevated cars at Forest Hills. This building will be 500 feet long and 60 feet wide and have a capacity of 40 cars. The yard tracks will have capacity for 95 additional cars. The building will be modern in every respect and make possible the closing of the present inadequate shop at Guild Street, Roxbury. It is anticipated that this will be in operation in October of this year.

Materials and Supplies

In the maintenance and operation of this railway last year it required $3,093,934.69 of the operating revenue to provide materials and supplies. The variety and quantity of these articles if displayed at one location would give the appearance of a wholesale establishment and quite likely be a surprise to many engaged in the industry who had never appreciated this feature of operation. Among the larger items are

Rails, ties, wheels, copper, lumber, stone, cement, sand.

The great variety can best be illustrated by listing the following:

Hay, oats, kerosene, gasoline, oil, alcohol, glue shellac, lead, hose, tape, waste, rope, nails, springs, steel bars, iron bars, rivets, bolts, line tools, lamps, brooms, pencils, paper, ink.

BOSTON ELEVATED RAILWAY
FOREST HILLS INSPECTION SHOP
HYDE PARK AVE. BOSTON.

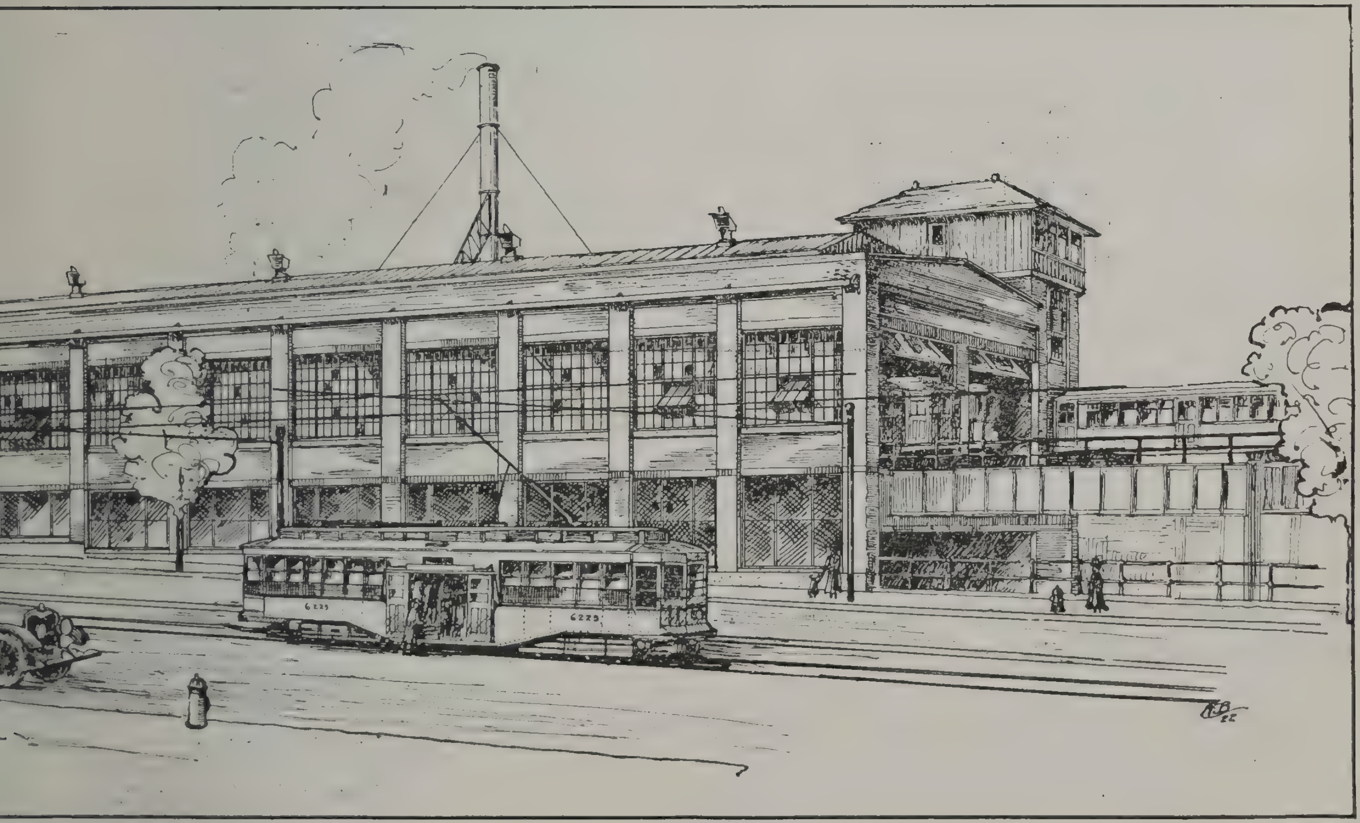
What is most significant about this subject is that we have a direct responsibility to the car rider who meets these items in the cost of service to see that this volume of material and supplies is handled efficiently and economically and not carelessly and wastefully. It required all of the revenue for thirty-three days to pay this operating charge. Co-operation means care in using and handling material and supplies.

Keep Improving

Hon. E. Mark Sullivan, Corporation Counsel of the City of Boston, in a recent speech, said:

"The motto of every man dealing with the public is 'Service' and no service however adequate can be satisfactorily adequate if the public fails to appreciate it.

"The American people are fair. They are by every instinct generous. I wish to pay my tribute tonight to Hon. James F. Jackson and his associates for the efforts which they are making to give to this great city a decent and adequate transportation system. And they are enjoying at the hands of the people of Boston today a sympathetic and an intelligent tolerance that I believe few railway managers ever enjoyed in recent years. And the reason of it all is that no man goes to their office inquiring regarding the economics of the railway system without receiving prompt and generous explanation to any inquiry that is put to them."



Senior Uniformed Man of Each Division in Car Service Today

(Left to right)	Div. No.	Years of Service
Mman. Alexander Harvey	4	39
" William Newton	2	57
" Edward Sweeney	1	51
" Edwin T. Fogg	3	44
" Martin J. Dolan	R.T.	33

"Life is full of golden opportunities for doing what we do not want to do."

† † †

"Success is not measured by what a man accomplishes but by the opposition he has encountered and the courage with which he maintained the struggle against overwhelming odds."

EDWARD DANA,
General Manager.

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PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

Better Service for the Car Riders

No. 5 **May, 1922**

The Reserve Fund created under the Public Control Act now totals $1,171,866.60. In July, 1922, all of this Reserve Fund in excess of the $1,000,000 required by law will be repaid to the cities and towns that contributed to the loan assessment which made up the deficit of $3,980,151.67 assessed in 1919. Our efforts are now directed toward the repayment to the municipalities of a substantial amount in July.

The Reserve Fund was exhausted in 1918 and fully restored in April, 1922. May, 1922, will be the first month in the entire three years and ten months of public operation that receipts will exceed cost of service and at the same time the Reserve Fund be intact. We may all take pride in the success that has been achieved to date.

Division Conferences

Each week a group of trainmen gather at the Superintendents' offices and discuss the problems and responsibilities with the division head. Such an informal hour gives an opportunity for those attending to think about this work in a serious way while not actually engaged on duty. The best results can be derived from these gatherings only in proportion to the amount of thought given to the subjects. We are engaged in this undertaking first, last and always for the purpose of service to the car riders and the community. Performing this service provides our livelihood and we should secure the joy that comes from real work well done.

The cut shows one of the conferences in each of the divisions and it also shows a body of men determined to render service to the community.

New Surface Cars

Order has been placed for 100 new surface cars which may be operated either by one or two men as occasion requires. They will cost approximately $10,500 each and will make possible the retirement of box cars and articulated cars. The new cars will represent the best development of present day ideas in surface car construction.

The following comparison between the new cars, #4 semi-convertible cars and Birney safety cars gives a clear idea of their characteristics:

	#4 Semi..	New Car	Birney safety car
Approx. Cost	$8,000	$10,500	$6,771
Ton Weight—empty..	26½	15	8-¼
Seating capacity	52	48	32
Motors	4-W.H. 306 50 HP each	4-G.E. 264-25 HP each	2-G.E. 264-25 HP each
Control	W-H.L.	K-35	Standard safety car
Width of aisle.......	28″	28-¼″	22″
Width of door.......	4′ 6-¾″	4′ 7-¾″	2′ 9″
Height of car........	12′	10′ 7-½″	9′ 10-⅛″
Overall length	48′ 2-½″	45′	28′ ½″

It is an opportune time to consider the passenger car equipment of this railway.

Type of Car	No.	Age
Semi-convertible	435	8 to 16 years
Centre-entrance	396	1 to 4 years
Trailers	220	4 to 6 years
One-man	125	2 to 18 years
Miscel. surface	427	18 to 24 years
Elevated cars	341	Less than 1 year to 20 years
Camb.-Dorch. Tunnel cars........	95	5 to 11 years

a grand total of 2,039 passenger cars, representing a total cost of $19,456,574.57, or 18.6% of the entire investment in this railway.

At the present time there are 1,721 men engaged in the Department of Rolling Stock and Shops, which is charged with the responsibility of repair and maintenance of this equipment. It required $2,741,357.23 during the year 1921 out of operating revenue for maintenance of cars, shop equipment, etc. There were 1,080 surface cars damaged last year by accidents. Those who are responsible for damaging equipment are directly adding to the cost of service to the car riders. We can be more careful if we will but think of such matters.

Better to Climb and Fall

"Give me a man with an aim
  Whatever that aim may be,
Whether it's wealth, or whether it's fame,
  It matters not to me.
Let him walk in the path of right,
  And keep his aim in sight,
And work and pray in faith alway,
  With his eye on the glittering height.

Give me a man who says:
  "I will do something well,
And make the fleeting days
  A story of labor tell."
Though the aim he has be small,
  It is better than none at all;
With something to do the whole year through,
  He will not stumble or fall.

Give me a man whose heart
  Is filled with ambition's fire;
Who sets his mark in the start,
  And keeps moving it higher and higher.
Better to die in the strife,
  The hands with labor rife,
Than to glide with the stream in an idle dream,
  And lead a purposeless life.

Better to strive and climb
  And never reach the goal,
Than to drift along with time,
  An aimless, worthless soul.
Aye, better to climb and fall,
  Or sow, though the yield be small,
Than to throw away day after day,
  And never to strive at all."

EDWARD DANA,
General Manager.

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PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

Better Service for the Car Riders

No. 6

JUNE, 1922

During May 2,175,649 more passengers were carried than last year.

	1922	1921
10c	24,833,672	27,634,670
5c	6,513,460	1,536,813
Total	31,347,132	29,171,483
Per cent. of 5c pass. to total	20.77	5.27

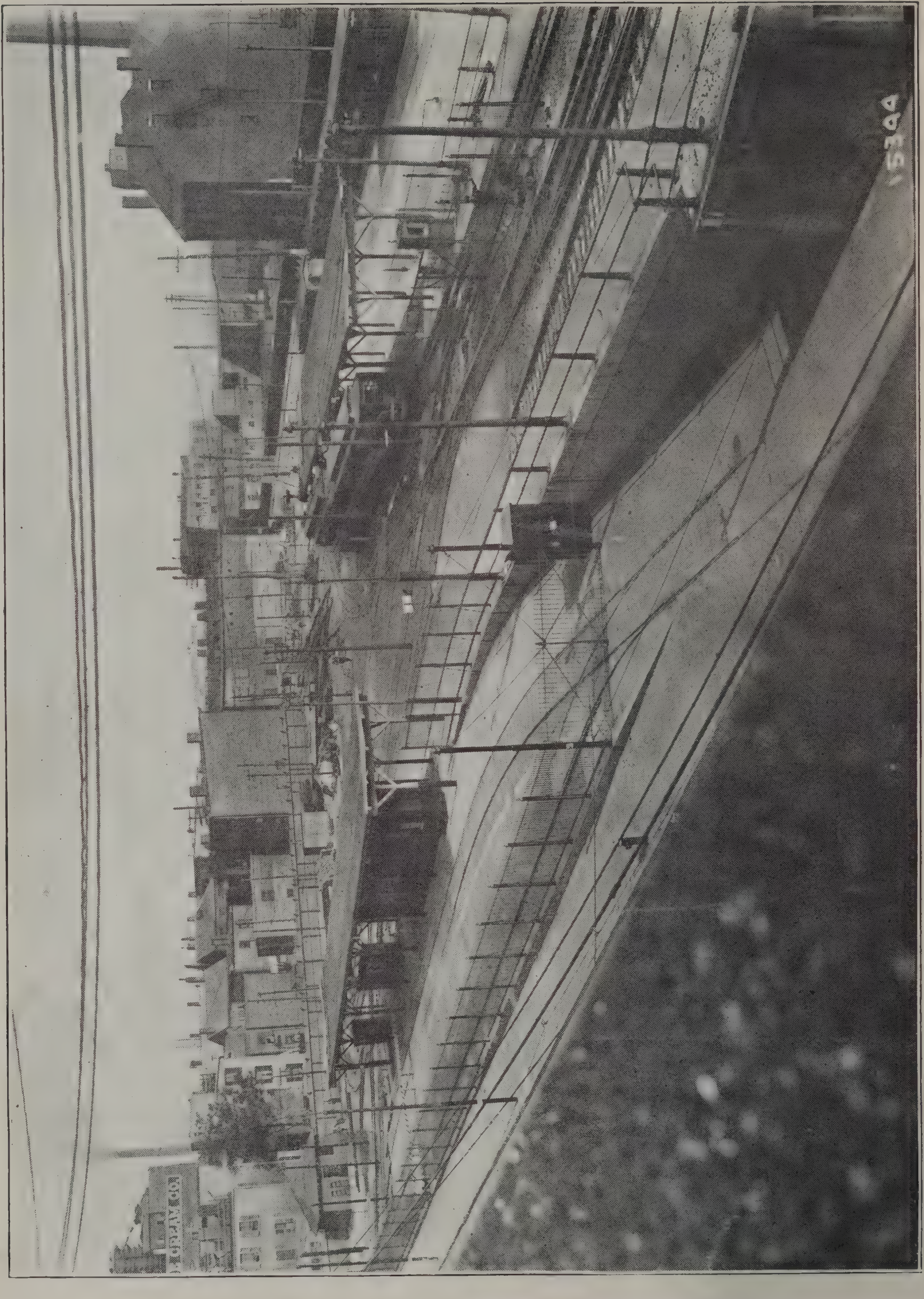
The total revenue was $47,528.39 less than last year, but revenue exceeded expenses by $257,800.28.

	1922	1921
Revenue	$2,883,701.80	$2,920,590.58
Cost of service	2,625,901.52	2,633,121.01
Excess Revenue over Cost of service	$257,800.28	$287,469.57

The Reserve Fund created under the Public Control Act now totals $1,429,666.88.

More Rapid Transit

During the month of July, two and three car trains will be operated between Lechmere Square, East Cambridge and Broadway and Shawmut Avenue. Highland Avenue, Somerville Avenue and Cambridge Street cars will transfer passengers at the Lechmere Square Terminal to trains operated every four and five minutes during non-rush hours and every three minutes during the rush hours. The increased seating capacity provided over the Viaduct and through the Tremont Street Subway amounts to 8,754 per day and many of the transfer difficulties at subway stations will be remedied. It is natural that passengers should not appreciate the full benefits of such a change until it has been placed in operation, and it is our duty to be as considerate as possible and helpful in explaining just what the change in operation means.



LECHMERE SQUARE TERMINAL

Are You Growing Broader?

Are you becoming brave and bolder,
  Better and wiser as you grow older,
More sympathetic and kind to those you meet,
  More manly and ready to take defeat?
Then you are growing broader.

Would you be a little more finer,
  More ready to smile and less the whiner,
A bit quicker to stretch out the hand to
  Help a fellow that is struggling to stand?
Then you are growing broader.

Are you seeking to be more fair,
  Better, more just and square,
Not so ready to criticise and blame,
  Quicker to help fellowmen in the game?
Then you are growing broader.

Do you aspire to be a bit more truer,
  Less of the wisher and more the doer,
Broader and bigger, more willing to give
  In order to help fellowmen to live?
Then you are growing broader.

—W. D. Mahon.

From the "Motorman and Conductor" of June, 1922.

Track Construction

During the summer season the maintenance of track becomes an important function. The total track leased and owned at the present time is as follows:

Tracks used by rapid transit trains	43.961 miles
Tracks used by surface cars	488.472 miles
Total	532.433 miles

Last year the following was accomplished:

2.6 miles of new construction;
24.6 miles of track rebuilt;
13.8 miles of track extensively repaired.

At the present time the cost of a mile of single track is $54,000.00. It is illuminating to reduce to the simplest terms the construction of 100 feet of single track. The material used and work involved in building 100 feet of track is as follows:

45 cubic yards of excavation
25 tons of broken stone
3.7 tons of rail
3⅓ joints welded
12 tie rods
50 treated wood ties
100 tie plates
1 keg of spikes
100 bags of cement
15 tons of sand
3,000 granite paving blocks
100 square yards of paving laid.

Included in the organization of the Maintenance Department is the Surface Lines Road Department, Rapid Transit Lines Road and Signal Departments, Building, Engineering, Architectural, Structural, Maintenance and Track Equipment Departments and Tie & Timber Treating Plant. There are at present 1,407 men engaged in the department. It required $2,746,844.18 out of 1921 operating revenue to care for maintenance of way and structures. The total present investment in track and special work is $13,154,566.35, or 13.87% of the entire investment in the railway.

"Life is not so short but that there is always time enough for courtesy".—Emerson.

EDWARD DANA,
General Manager.

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PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

Better Service for the Car Riders

No. 7 **JULY, 1922**

The fourth year of public operation ended on June 30, 1922. The comparative revenue and cost of service figures for the four years are included in this bulletin as well as divisions of expenses, which picture the actual conditions which have existed during this period.

June operation resulted in an increase of 1,090,810 revenue passengers and a loss of $121,007.53 in total revenue but an excess of revenue over cost of service of $87,529.57.

The reserve fund created under the 1918 Act now totals $1,517,196.45 and $517,196.45 has been paid over to the Treasurer of the Commonwealth for distribution to the cities and towns that contributed to the loan assessment in 1919.

We have waited and worked for this day of meeting in part the obligation incurred during the first year of public operation. Without co-operation, knowledge of the problem and a spirit of service such a result could not have been obtained and all may take pride in the results. It is not an impersonal matter; it is a very vital matter connected with our daily business lives.

Let us go onward through the fifth year, the first stripe year of public operation, better equipped to meet the problems which will arise and determine to keep our heads steady regardless of the flurries which may occur around us.

It seems appropriate to carry to our organization a picture of the board of public trustees in meeting at the beginning of the fifth year as a relatively small number of employees in the course of everyday business can come in personal contact with them.

THE FIRST TRUSTEE MEETING OF THE FIFTH YEAR OF PUBLIC CONTROL

THOUGHTS

"In about every man there is a touch of the creative, in some practically dormant, in others highly developed and very active, in which case we call him an inventor. But practically every one if he applies himself sufficiently can originate ways of performing his own work which would materially lessen it or speed up his output and thereby increase his value to himself and car rider."

A poem which has general application came to notice recently entitled "Let's Get Better Acquainted":

"When you get to know a fellow,
Know his every mood and whim,
You begin to find the texture
Of the splendid side of him.

You begin to understand him,
And you cease to scoff and sneer;
For with understanding always
Prejudices disappear.

You begin to find his virtues
And his faults you cease to tell,
For you seldom hate a fellow
When you know him very well."

Summer is at hand. Do not let it pass without gaining all the advantages in health and recreation which nature lavishly offers.

In the May issue of The Automobilist the following vivid description of carelessness, while applied to driving of automobiles in the highway, is of interest to all because of its safety first value:—

From the Automobilist of May, 1922

LET US THINK OF THE NEEDLESS SORROW AND SUFFERING we create by our simple thoughtlessness. In a New York village lived a business man and his beautiful wife. Passionately fond of children there came to them a beautiful girl baby.

Every waking thought of that father gathered around that child. The tendrils of that mother's heart knit into every heart throb of her beautiful little one. That child became the center of every thought, of every plan and purpose of that home. In the bank they opened her "Love account" which was to make her future secure, and as though responding to such love, the little child grew more beautiful, more appealing, more love compelling each day, till at last she passed her fifth birthday.

Then, one day at the noon hour, out of the house she went to meet her daddy, and seeing him on the other side of the street she began to toddle across to find his kiss and his arms. Swiftly down the street at forty miles an hour came the neighbor's car, driven by the neighbor's son, a young fellow of twenty-two. He was not thinking of doing anything vicious. He was only utterly thoughtless of his responsibility when controlling a power so mighty. He was heedlessly dominated by the thrill of speed.

When almost upon her, he saw the child. He blew his horn, but how could that little thing know what a horn meant? She turned and smiled. The father ran frantically. The mother screamed and fainted. The driver convulsively jammed on the brakes, tried vainly to dodge by, but the child, confused, stepped back directly in front of the car. There came a sickening thud—and silence.

The wildly broken-hearted father gathered her poor shattered little body in his arms and rushed her to the hospital. For days she tossed in screaming torture, her poor shattered little spine shooting agony to her very finger tips, while the half-crazed mother and the agonized father stood in speechless torture over her bed. She lived—yes, she still lives, a hopeless cripple. In her little wheel chair, her pitiful broken wee body is pushed along. Each day that neighbor's son looks as he goes by. What must be the sensation of his heart as he gazes upon what he has done? What hidden agony of self-accusation he will feel to the journey's end! The ruin of two lives through heedlessness.

Oh, no, he did not mean to do it. His mind was clean of unkind intention. He would not have hurt that lovely child for his right arm. He would make any sacrifice today to give her back her smile; to see her jump and run in childish joy once again. But it can never be. He did one thing only, HE DID NOT THINK.

BOSTON ELEVATED RAILWAY ACTUAL RECEIPTS AND COST OF SERVICE DURING 4 YEARS OF PUBLIC CONTROL.

"RECEIPTS"

	Year Ending June 30, 1922	Year Ending June 30, 1921	Year Ending June 30, 1920,	Year Ending June 30, 1919
From Fares	$31,690,852.20	$33,122,199.84	$31,899,320.79	$24,472,429.26
From operation of special cars, mail pouch service, express and service cars	70,901.70	88,518.47	105,554.15	115,623.65
From advertising in cars, on transfers, privileges at stations, etc.	308,161.82	303,046.39	297,036.87	293,079.90
From other Ry. Cos. for use of tracks and facilities	29,314.62	30,024.38	47,636.36	48,814.27
From rent of land and buildings	107,596.35	115,808.75	87,258.87	73,099.65
From sale of power, etc.	98,293.43	121,566.40	115,187.91	125,534.27
Total "Receipts" from direct operations of the Road	$32,305,120.12	$33,781,164.23	$32,551,994.95	$25,128,581.00
Interest on Deposits, Income from Securities, etc.	393,844.89	419,121.83	119,520.58	96,994.63
TOTAL "RECEIPTS"	$32,698,965.01	$34,200,286.06	$32,671,515.53	$25,225,575.63
Profit and Loss, Delayed Items	82,528.09	23,863.77	17,685.34	2,079.91
	$32,781,493.10	$34,224,149.83	$32,689,200.87	$25,223,495.72

"COST OF SERVICE"

	Year Ending June 30, 1922	Year Ending June 30, 1921	Year Ending June 30, 1920,	Year Ending June 30, 1919
Operating Expenses:				
Maintenance of track, line equipment and buildings	$ 2,695,807.36	$ 2,516,330.80	$ 3,524,506.06	$ 3,583,056.48
Maintenance cars, shop equipment, etc.	2,591,142.20	2,857,114.93	2,736,249.64	2,519,484.38
Power	2,541,441.84	3,390,704.21	2,930,267.07	2,809,631.27
Depreciation	2,004,000.00	2,004,000.00	2,004,000.00	2,004,000.00
Transportation expenses	10,223,043.64	11,506,156.50	10,781,788.27	9,293,160.02
Salaries of administrative officers	82,999.96	79,749.96	83,761.84	94,060.21
Law expenses, injuries, damages, insurance	996,301.91	1,158,093.98	1,107,005.77	1,162,547.17
Other general expenses	979,046.85	1,106,880.52	963,643.32	896,232.44
Back Pay		65,527.51	200,000.00	
Total Operating Expenses	$22,113,783.76	$24,684,558.41	$24,331,221.97	$22,362,171.97
Taxes—Federal, State and Municipal	1,610,096.47	$ 1,306,736.39	$ 1,075,496.70	$941,611.50
Rent for Leased Roads	2,549,625.48	2,673,166.56	2,607,565.96	2,587,129.57
Proportion of rent of subways and tunnels paid to City of Boston	1,575,866.89	1,543,324.04	1,531,473.98	1,491,999.54
Proportion of rent of Cambridge Subway paid to Commonwealth of Massachusetts	398,274.18	404,639.16	59,850.00	
Interest on Boston Elevated bonds, notes and bills	1,483,786.91	1,483,625.54	1,593,257.58	1,423,142.14
Miscellaneous Items	58,475.99	54,479.21	69,284.73	37,372.67
Proportion of dividend rental under acts of 1918	1,606,371.98	1,523,367.00	1,403,970.00	1,360,220.00
"TOTAL COST OF SERVICE"	$31,396,281.66	$33,673,896.31	$32,672,120.92	$30,203,647.39
NET PROFIT OR LOSS	$1,385,211.44	$550,253.52	$17,079.95	$4,980,151.67
Back Pay applying to May and June, 1919, which had not been determined at time deficit was assessed				435,348.46
				$5,415,500.13

REVENUE

	4th Trustee Year Ending June 30, 1922	3rd Trustee Year Ending June 30, 1921	2nd Trustee Year Ending June 30, 1920	1st Trustee Year Ending June 30, 1919	Year Ending June 30, 1918
Revenue from fares	$31,690,852.20	$33,122,199.84	$31,899,320.79	$24,472,429.26	$18,781,370.76
Revenue passengers	345,545,009	337,381,994	324,192,374	331,348,124	376,466,229
Rate of fare	5c & 10c	10c	10c	5c, 7c & 8c	5c

COMPARATIVE DIVISION OF EXPENSES

Wages	$14,920,406	$16,753,667	$16,381,206	$13,554,684	$9,147,757
Materials & Supplies	3,056,520	2,899,983	3,321,672	4,096,538	2,680,424
Injuries & Damages.................	476,844	627,629	627,626	805,353	817,227
Depreciation	2,004,000	2,004,000	2,004,000	2,004,000	352,670
Fuel	1,656,012	2,399,277	1,996,717	1,901,597	1,381,957
Taxes	1,610,096	1,306,736	1,075,497	941,612	905,033
Rent of leased lines................	2,549,625	2,673,166	2,607,565	2,587,129	2,547,421
Subway & tunnel rentals	1,974,141	1,947,963	1,591,324	1,491,999	991,551
Interest on borrowed money........	1,483,786	1,483,625	1,593,258	1,423,142	1,238,374
Miscellaneous items	58,475	54,479	69,285	37,373	16,050
Dividends	1,606,371	1,523,367	1,403,970	1,360,220	None
Profit or	1,385,211	550,253	17,080		
Loss	....	....	....	4,980,152	598,442
				Back Pay 435,348	
				5,415,500	

Tie and Lumber Creosoting Plant at South Boston

It has been stated that 100,000,000 cross ties are replaced annually in the United States.

The increasing practice of preserving wood is an effort to decrease the drain on our forests as well as for economy.

If all ties now in service in the country had been treated, it is estimated that the number required annually for renewals would be approximately 40,000,000.

This railway constructed a treating plant at South Boston in 1916 for treatment of ties and lumber with coal tar creosote.

Few street railways in this country have taken such a step.

The life of untreated hard pine ties is from 7 to 9 years, while treated ties last **15 to 25 years.**

In 1921 the South Boston plant treated

67,782	Southern Hard Pine Ties	2,155,732′ B.M.
324,671	Wood Paving Blocks	234,755′ B.M.
	Sawn Lumber	729,134′ B.M.
	Total	3,119,621′ B.M.

165,000 gallons of creosote oil was used.

The cost of operating the plant for the year 1921 was $73,779.62. There are 25 men employed at this plant.

For those interested further in the subject of lumber treatment, much valuable information may be secured from books entitled "Maintenance of Way and Structures," by Wm. C. Willard, C.E., M.S., and "The Preservation of Structural Timber," by Howard F. Weiss.

On Sunday, June 11th, 1922, a severe wind, rain and sleet storm occurred in the territory served by the railway. Men on duty as well as those immediately called out performed unusual service and maintained operation to the best of their ability in the interest of the car riders. The operation of a street railway always faces the unusual and standards of operations are determined by the spirit of co-operation in meeting such emergencies.

EDWARD DANA,
General Manager.

9388.7446A

PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

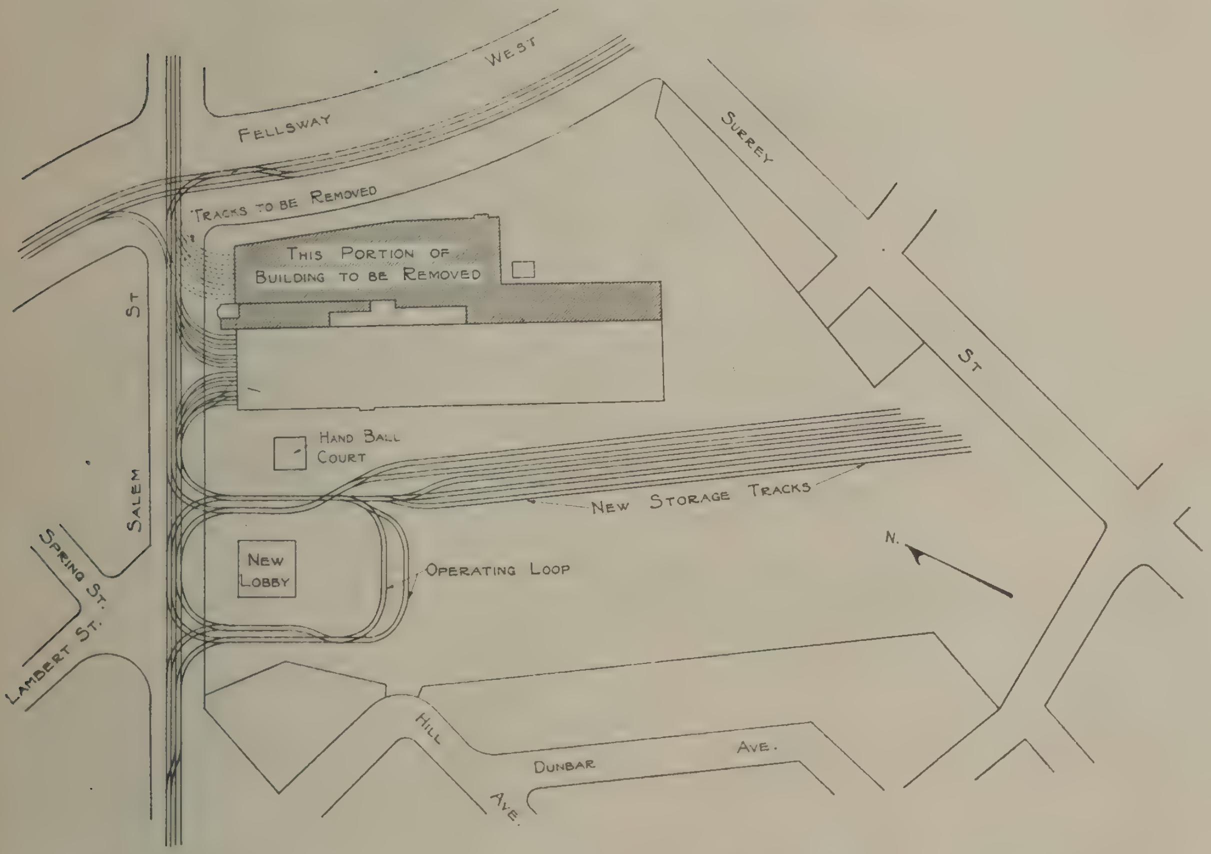
CO-OPERATION

Better Service for the Car Riders

No. 8

AUGUST, 1922

Salem Street Carhouse Development



Work has begun on the development of a modern carhouse, yard and lobby at Salem Street, Medford. This station serves Malden, Medford, and sections of Everett and Somerville, and the present layout is typical of a former day.

The cut shows the first step in the yard development, the new lobby and the portion of the old house to be removed at the present time.

· OPERATING LOOP AND LOBBY · · BOSTON ELEVATED RAILWAY ·
SALEM ST., MEDFORD, MASS.

There are 93 cars and 232 men at this station.

The new lobby which will be provided will be thoroughly appreciated by those who for so many years have used the existing lobby. Equipped with modern conveniences—shower baths, etc.—and provded with a handball court, there is no doubt but what the service rendered by the men on the cars from this station will immediately reflect the new surroundings.

"When you play, play hard;
When you work, don't play at all."
—Theodore Roosevelt.

"The time of day I do not tell
As some do, by the clock,
Or by the distant chiming bell
Set on some steeple rock;
But by the progress that I see
In what I love to do;
It's either Done o'clock to me
Or only Half-past Through."
—Two Bits.

The words printed on the back of the cover of the present agreement were written by the Business Agent of Local 589 and should be a fitting reminder to all that only through an earnest endeavor to carry out the spirit of the matter contained in the Rules and Regulations, as well as the Agreement, can co-operation and success be accomplished.

A safe motorman says:

"Safety stops are installed approximately 100 ft. from drawbridge openings and are designated by a sign requiring car to come to a full stop before proceeding. I never fail ~~to~~ obey this rule."

Cost of Service exceeded receipts by $104,149.97 during July. This was a better showing than in July of last year, and is very creditable, considering that the track reconstruction work for the entire year is performed during the summer months. In July 1,770,130 more revenue passengers were carried than in July last year, and over 22 per cent. of the total were five-cent passengers. The average fare paid was 8.896 cents.

	1922	1921
Total Revenue	$2,472,136.81	$2,534,774.94
Cost of Service	2,576,286.78	2,669,504.90
Excess of cost over Revenue	$104,149.97	$134,729.96

The Reserve Fund has been reduced to $931,222.13.

	1922	1921
10c Passengers	21,082,822	23,644,661
5c Passengers	5,966,895	1,634,926
Total Revenue Passengers...	27,049,717	25,279,587

EDWARD DANA,
General Manager.

August 18th, 1922.

9388.744 6A5

PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

Better Service for the Car Riders

No. 9 SEPTEMBER, 1922

Armature Repair Shop

There are many details in the operation of our system with which the car rider is unfamiliar, but which are all necessary in order that uninterrupted, economical, efficient service may be rendered.

The cut shows the present armature repair room, which will shortly be replaced with up-to-date facilities in the new shops. The Railway has 7,693 armatures, and one armature for one motor of a centre entrance car costs $400. During the last year 5,000 armatures were received for repair in the armature room, 1,600 of which were re-wound. All armatures upon being received are cleaned and tested and if found satisfactory are heated over night and dipped in insulating varnish, after which the armatures are placed in an oven for final baking. Those that are found unsatisfactory are re-wound and then dipped and baked.

During the year ending December 31, 1921, fifty thousand coils were required in re-winding and repairing armatures, which represent approximately 500 miles of copper wire.

The group of employes performing this work number approximately 61 and are members of Local 717, International Brotherhood of Electrical Workers.

I was privileged to attend the installation of officers of this local recently and can assure our organization of their determined spirit of co-operation in the rendering of satisfactory service to the car rider.

In Life's small things be resolute and great
To keep thy muscle trained; know'st thou when Fate
Thy measure takes or when she'll say to thee,
"I find thee worthy, do this deed for me."
—James Russell Lowell.

AN OBJECT LESSON IN CO-OPERATION

The following quoted paragraph seems pertinent for the sake of emphasizing the meaning of co-operation as well as lack of co-operation. When one realizes the perfection of co-operation in the human body, the co-operation of 9,000 individuals in the interest of the car rider would seem not only desirable but of the utmost importance to attain:

> "The body is thus, in one sense, a huge cell state, with a cell population thousands of times larger than the total human population of the world. A single act of thought involves the co-operation of a vast multitude of brain cells; a single movement of a limb implies the contraction of thousands of muscle cells; a single beat of the heart sends billions of blood cells whirling down the dark pipes that we call blood vessels. Each of these cells is a unit of life, comparable in some respects to a single free-living cell, such as an Amoeba or a Slipper Animalcule. The enforcement of harmony and co-operation among such a vast multitude of units is the greatest achievement of evolving life. How necessary such enforcement is, and yet how difficult, is shown by the effects of cell insubordination, as in cancer and malignant growth. In cancer, a few cells embark upon a career of unchecked growth and multiplication at the expense of the rest, and by so doing involve themselves and the rest of the cell community in the common ruin of death."—Outline of Science, Vol. III, p. 684.

SCHOOL TIME ONCE MORE

When the vacation days are over the movement of children back to school becomes one of the important subjects of the hour in every household. Each year sees a new group of beginners as well as those returning to an advanced standing. The safety of these children on the highways is an obligation upon us all. Have them in mind as you go about your daily work and with your intimate knowledge of the dangers, be sure your own children are drilled in the idea of safety that they may by their knowledge and carefulness be an example to help others.

Full many a race is lost
Ere even a step is run,
And many a coward falls
Ere even his work's begun.
Think big, and your deeds will grow;
Think small, and you'll fall behind;
Think that you can and you will;
It's all in the state of mind.
—"The Power of Will," by Gaither Allison.

OPERATING RECEIPTS IN AUGUST

Cost of service exceeded receipts by $217,128.55 during the month of August.

In August 1,434,009 more revenue passengers were carried than during the same month last year.

The number of five-cent passengers amounted to 22.3% of the total passengers carried, and the average fare was 8.883 cents.

During July and August last year the receipts failed to meet the cost of service by $317,255.39, whereas during those same months this year the amount has been $321,278.52. This deficit will have to be overcome during the balance of the year.

Co-operation means securing all the revenue, avoiding accidents, being considerate of car riders, helping one another, conserving material and supplies and not wasting time. Remember that the man who does not try to do right by the car rider does not merit his place on this railway.

EDWARD DANA,
General Manager.

September 18, 1922.

9388.M446A

PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

Better Service for the Car Rider

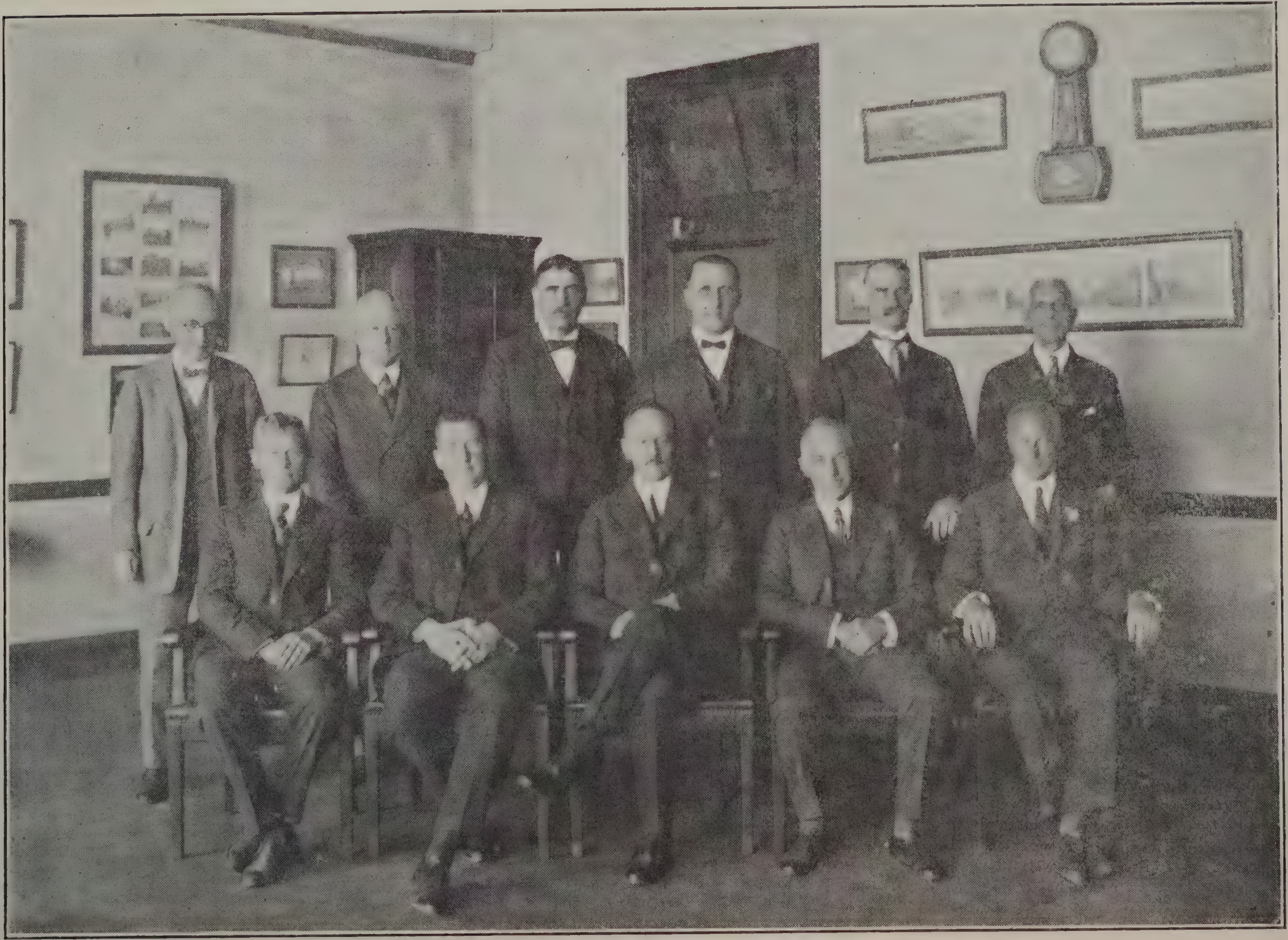
No. 10 OCTOBER, 1922

Department Heads

An organization comprising 8,500 individuals must of necessity be divided into departments. There are ten departments on this railway and on the next page is a photograph of the men who are the responsible heads of these departments.

Many of you know your own department head and the cut will give you an opportunity to know the other department heads and appreciate the relationship between departments. These men will be glad in the interest of personal contact and co-operation to have you speak to them at any time. It is of interest to note that the average length of service is twenty-three years and the maximum forty-one years.

Our Departments



Edward Mahler, Purchasing Agent — Harry M. Steward, Supt. of Maintenance — John Lindall, Supt. R. S. & S. — Frederick S. Freeman, Supt. of Power — James Smith, Supt. of Trans. — Clarence E. Learned, Supt. of Inspection

H. Ware Barnum, Gen. Counsel — John H. Moran, Gen. Auditor — Edward Dana, Gen. Manager — Henry L. Wilson, Treasurer — Russell A. Sears, Gen. Claims Atty.

At the American Electric Railway Association Convention, recently held in Chicago, President Robert I. Todd stated in his annual address:

"Prosperity is increasing on most of the city electric lines of the country and their managements are keeping pace with the riders.

"PROBABLY NO INDUSTRY IS DOING MORE TO BRING THE BUSINESS OF THE COUNTRY TO A PRE-WAR BASIS THAN THIS ONE."

SAND

I observed a locomotive in the railroad yards one day.
It was standing near the roundhouse, where the locomotives stay;
It was panting for the journey; it was coaled and fully manned,
And it had a box the fireman was filling full of sand.

It appears that locomotives cannot always get a grip
On their slender iron pavement, 'cause the wheels are apt to slip;
So when they reach a slippery spot, their tactics they command,
And to get a grip upon the rail, they sprinkle it with sand.

It's about this way with travel along life's slippery track,
If your load is rather heavy and you're always sliding back;
If common locomotion you completely understand,
You'll provide yourself in starting with a good supply of sand.

If your track is steep and hilly and you have a heavy grade,
If those who've gone before you have the rails quite slippery made,
If you ever reach the summit of the upper tableland,
You'll find you have to do it with a liberal use of sand.

If you strike some frigid weather and discover to your cost
That you're slipping, slipping, slipping, on a heavy coat of frost,
Then some prompt, decided action will be called into demand,
And you'll slip 'way to the bottom if you haven't any sand.

You can get to any station that is on life's schedule seen,
If there's fire beneath the boiler of ambition's strong machine,
And you'll reach a place called Success, at a speed that's simply grand,
If for all the slippery places you've a good supply of sand.

—Boston Globe.

September Operation

Cost of service exceeded revenue by $43,048.24 as compared with $149,395.98 last year.

The first three months of the fifth year of public operation find us $364,326.76 behind in revenue compared with $466,651.37 last year.

22.54% of the revenue passengers were 5c passengers and the average fare was 8.872 cents.

36,000 more trips and 133,000 more miles were operated.

Satisfactory progress was made upon the construction work under way at Forest Hills, Salem St., Bennett St., South Boston Power Station and Everett Shops.

645 cars since January 1st have been overhauled and painted as compared with 483 last year.

STREET CAR PROVERBS

He who spreads himself out across the aisle shall be humbled and he who strives to make room for his fellow-man shall be exalted. Blessed be he who giveth up his seat unto a lady, but scorned shall be he who hideth behind his paper. He who standeth upon the platform and emitteth poison gas from a noxious weed is an abomination unto his fellow passengers. The wrath of many who wait shall descend upon the head of him who hath not his fare ready. A wise one is he who goeth forward in the car for he shall be rewarded with a seat. And he who standeth in the aisle, blocking the passage of other riders, shall merit the disdain of his fellows. Blessed are those who hand transfers unfolded, for by such is the service improved.

WORTH WHILE LINES

There is nothing that costs so little and goes so far as courtesy.—*Robinson.*

When one gets to like work his life is a happy one.—*Ruskin.*

Keep your face toward the sunshine and the shadows will fall behind you.

It is easier to prevent an accident than explain about it afterwards.

Important Events in the Near Future

The following list of some of the most important events in the near future will involve a direct contact with 150,000 riders, some of them strangers and many taking rides different from their usual habit. Providing satisfactory service requires a special effort to be courteous and ready to give information in order that these 150,000 will be glad of the treatment accorded them.

BRAVES FIELD

Oct. 30	Boston Latin	vs Commerce
" 31	English High	vs Mechanic Arts
Nov. 4	Boston Col.	vs Villanova
" 8	Dorchester H.	vs Boston Latin
" 11	Boston Col.	vs Baylor Univ.
" 15	English High	vs Commerce H.
" 18	Boston Col.	vs Canisius
" 21	Boston Latin	vs Mechanic Arts
" 25	Boston Col.	vs Georgetown
" 30	English High	vs Boston Latin
" 30	Dorchester H.	vs Commerce
Dec. 2	Boston Col.	vs Holy Cross

MECHANICS' BLDG.

Oct. 30 to Nov. 4 —Radio Show
Dec. 2 to 9 —Atlantic City Board Walk Carnival

STADIUM

Nov. 4	Harvard	vs Florida
" 11	Harvard	vs Princeton
" 18	Harvard	vs Brown

TUFTS OVAL

Nov. 4	Tufts	vs Middlebury
" 18	Tufts	vs Mass. Agric. Col.
" 25	Tufts	vs Boston Univ.

SYMPHONY HALL

Nov. 4 & 5 —Flower Show
" 6 to 11 —Furniture Exhibition

EDWARD DANA,
General Manager.

October 26, 1922.

9388.7 H46A5

PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

Better Service for the Car Riders

No. 11 NOVEMBER, 1922

Any Accident May Be Fatal

WE SHOULD BE THANKFUL

For the loyal, earnest, honest effort in the past four years which has enabled this railway to constantly improve.

For the assurances of future co-operation which will help this railway keep pace with the ever increasing progress of the district it serves.

And especially we should be thankful that it is granted to us to work with a large organization of men and women all working together in a cheerful, friendly manner with an honest desire to make our service what the people served wish it to be.

PENSIONS

On February 1, 1920, the Board of Trustees instituted a Pension Plan. There are four classes of employes who may be pensioned.

Class A—An employe whose age is 65 years or more (female 60 years or more) and whose term of employment has been twenty years or more.

Class B—An employe whose age is 60 to 64 years (female 55 to 59 years) and whose term of employment has been twenty-five years or more.

Class C—An employe whose age is less than 60 years (female less than 55 years) and whose term of employment has been thirty years or more.

Class D—An employe totally disabled as a result of sickness or injury and who does not come under any of the other classes as to age or years of employment. Each case under Class D is submitted to the Board of Trustees for approval upon recommendation of the Pension Committee.

The amount of pension is based upon 1¼% of the average yearly earnings for the ten years previous to retirement and multiplying this by the number of years of service with the company.

No employe shall receive less than $375 per year and the maximum is $2000 per year.

Pensions are paid on the first of each month for the preceding month in the sum of one-twelfth of the annual pension. At the time the Pension Plan went into effect there were 98 employes drawing gratuity allowances based on no particular plan amounting to $31,428.14 annually. At the present time there are 209 employes on the pension list receiving $95,004 annually.

The Pension is based upon continuous employment with the company.

Employes leaving the service of the company and later returning are eligible for pension dating from the day of their last employment.

Last month Motorman John Farrendon, seventy-two years of age and forty-nine years in service, was placed on the pension list at $822.72 a year.

SOUND ADVICE FROM A DIVISION SUPERINTENDENT

Pick Your First Witness

When you are involved in an accident that necessitates procuring the names and addresses of witnesses, you are the fellow who should keep a cool and level head despite the excitement of others. It is not the easiest thing to get witnesses' names when excitement and confusion prevail, but a little study will show how this work can be made easier.

In case of an accident how do you go about procuring witnesses? Do you hand a card to the person nearest your elbow on the chance that he noticed the accident and will give you his name?

Getting the first witness is important. If the first man refuses his name it is likely that others will follow his example. If the first one takes the card and gives his name the chances are that others will follow. There are always some passengers who stand near your position whether the car is full or not and it is a fair chance that one of the passengers near at hand has said "Howdy" or exchanged a smile. That passenger has shown a friendly disposition and will usually give you his name and address willingly. That is the start and the others will come more readily. A friendly passenger will usually help. Regular riders who take the same car or train every day will usually help, particularly if you have a pleasant word and a smile.

Like other elements of railway work, the more friends a man makes the easier his work becomes.

BOWLING

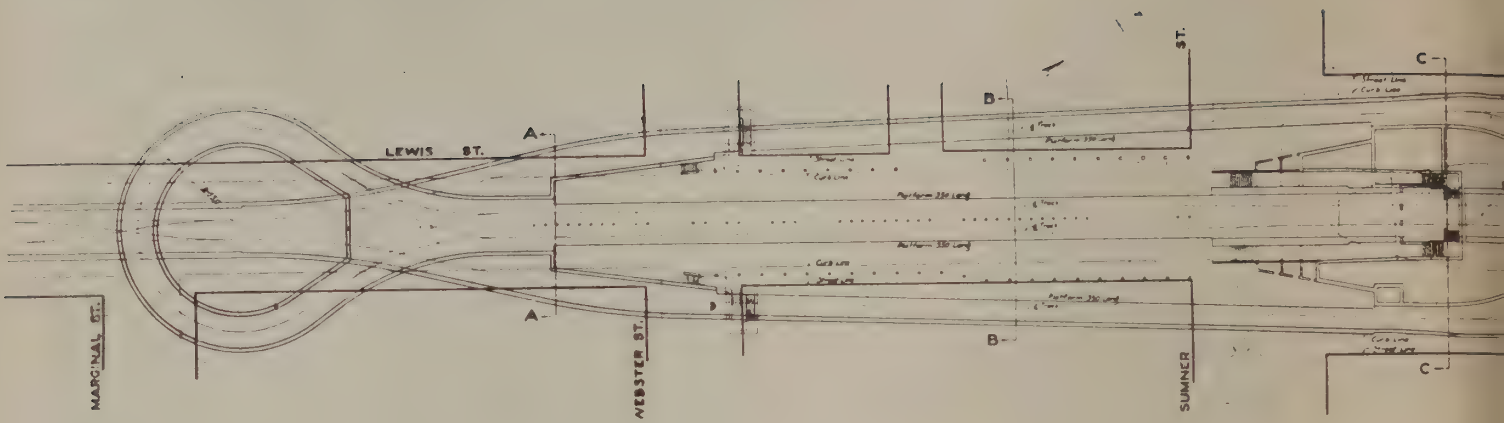
Some of our energetic fellow employes have formed a bowling league of eight teams and each Tuesday night at the Hub Alley at Washington and Dover Streets the slaughter of pins goes merrily on. Further evidence of co-operation. May the best team win.

LET'S PLAY

Let's dream like the child in its playing,
  Let's make us a sky and sea;
Let's change the things round us by saying
  They're the things that we wish them to be.

And when there is sadness or sorrow,
  Let's dream till we charm it away;
Let's learn from the children, and borrow
  A saying from childhood, "Let's play."

—*Anonymous.*



PLAN OF THE NEW

THE NEW MAVERICK SQUARE STATION

The traffic through the East Boston Tunnel has reached the point where the Tunnel must be made ready for train operation, if relief from existing conditions is to be obtained.

The Transit Department of the City of Boston has now completed 45% of the tunnel station and it is hoped steel trains similar to those on the elevated may be operated in the Tunnel in 1924. Forty cars have been ordered from the Pullman Company of Chicago for this service and reference will be made later to the unique, up-to-date design of these cars.

INTERESTING FACTS ABOUT THE EAST BOSTON TUNNEL

As originally planned it was opened to public travel December 30, 1904, and the extension on March 12, 1916.

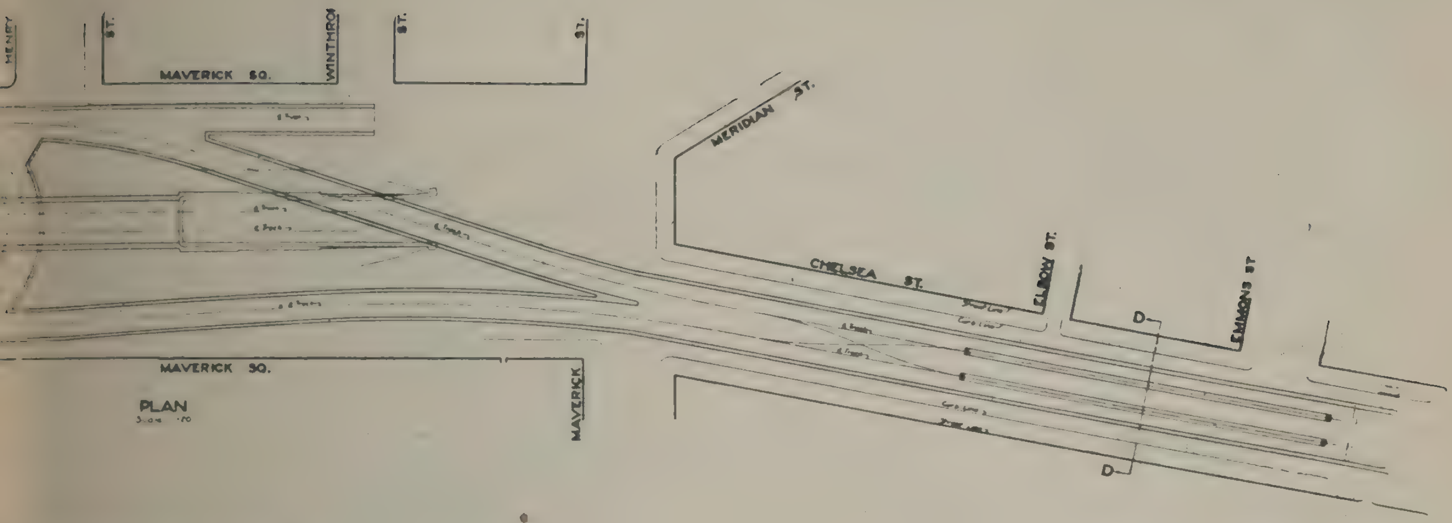
It was constructed by the Boston Transit Commission and was the first subaqueous tunnel for passenger transportation constructed entirely of concrete.

Work began on March 5, 1900, and the total cost was $5,594,784.97.

The length from Maverick Square to Bowdoin Square is 1.49 miles.

The width of the tunnel under the harbor where it is lined with ribbed tile is 23 feet.

The height of the tunnel from the top of the rail to the roof in the lower part of State Street and under the harbor is 17.3 feet.



AVERICK STATION

The depth of the lowest part of the tunnel below low water at the bottom of the masonry is 82.3 feet.

The traffic through the tunnel in 1905 was 10,331,705 and today the annual traffic is 26,000,000.

INTERESTING BITS OF TRANSPORTATION HISTORY IN EAST BOSTON

East Boston was formerly called Noddle Island. William Noddle was living there as early as 1631.

Communication with Boston until 1832 was by sail and row boats.

In 1832 a ferry was licensed to run with steam.

May 1, 1833, the first ferry boat, a small wheel boat, operated by hand, carrying 25 passengers, was run.

In 1833 the steamboat "Tom Thumb" was put on the line. In 1834 the steamboat "East Boston," costing $12,000, was put on. In 1835 the steamboat "Maverick," costing $15,000, was put on. In 1852, after much contention, the "People's Ferry Company" was organized and began operation in 1853. In 1853 the first night boat was put on and three boats run in the day time.

In 1868 a company was chartered to build a bridge but construction was forbidden by the United States Government.

In 1869 the City of Boston contracted for the purchase of the entire ferry plant for $275,000 and took it over on April 1, 1870.

In 1903 the equipment of ferries was seven boats—three screw and four paddle wheels.

The traffic on the ferries in 1904 was 13,200,433.

Submitted by an Employe and Officer of One of Our Unions.

POWER

Some verses in our bulletin extolled the use of sand;
The lessons taught in those few lines were plain to understand.
Yet more than that is needed, for after all is said,
Sand will not move the engine, it takes steam to go ahead.

While sand may save from slipping and help us keep a grip,
Yet lack of power may soon bring to an end our little trip.
When men are sore discouraged with the load they have to pull,
'Tis friendship fires that make the steam and keep the boiler full.

We talk in terms of I-E-R when speaking of the power
With which we serve the public as our cars run hour by hour.
Then why not use the selfsame terms to indicate the way
To serve the public better, and to bring each one more pay.

Now E which stands for pressure must overcome the R
If I which means the current is to travel very far.
So let E then for unity 'twixt management and men,
And R which means our problems will be settled there and then.

If each must face their burden unassisted by the rest,
Then our motive force is weakened when it's needed for the test.
But if, in mutual helpfulness, we meet the task in hand
We'll find ourselves well stocked with steam, well ballasted with sand.

There's nothing like a helping hand held out in time of need,
No matter who the man is, his color, race or creed.
So let us all co-operate for if history's page you scan
You'll find no great success achieved by any other plan.

OCTOBER OPERATION

Revenue exceeded cost of service by $253,621.08.

The deficit for the first four months of the fifth Trustee year is only $110,705.68 as compared with $333,473.09 for the same period last year.

23.6% of the traffic was 5c fare and the average fare was 8.819c.

1,956,852 more revenue passengers were carried and 33,640 more trips and 108,642 more miles were operated this last year during October.

HOLIDAY TRAFFIC

From now until New Year's we face the duty of caring for the Holiday traffic. We have no greater burden in this respect than many other industries, but we have a greater opportunity to affect the convenience and safety of hundreds of thousands of travelers and thereby gain good will and appreciation. Courtesy and safety should be the watchwords, not as printed words, but as actual deeds. Let us help to "Deliver the Goods" in the Holiday traffic rush.

EDWARD DANA,
General Manager.

November 27, 1922.

9388.744GA5

PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

Better Service for the Car Riders

No. 12 DECEMBER, 1922

"Merry Christmas"

The Last Few Days Before Christmas

To the clerks in the stores it brings the thought of tired bodies and nerves from the Christmas rush. To the postal clerks it brings the thought of countless numbers of cards and packages to be sorted and delivered. To us, charged with the transporting of millions of people under abnormal conditions, it brings the thought of heavy travel at the peak hours when everybody is trying to get home at the same time, tired and nervous. It brings the thought of directing thousands of people who come to Boston to do their Christmas shopping who are not very familiar with our system, and of exerting every effort to be just a little bit more careful, just a little bit more alert, just a little bit more courteous. But if we meet these added responsibilities with the very best that is in us, the joy of Christmas morning will have a deeper meaning for us, and the words "Merry Christmas" will have a happier ring.

ACCIDENT PREVENTION

What a member of the Claim Department says of the Safety Bulletin:

A careful reading of the various suggestions published in the current issue of the "Safety Bulletin" discloses a thought output on this subject which will compare favorably with the best safety literature thus far seen.

Having had considerable familiarity with safety first and accident prevention literature, I feel that all may be well pleased with the production of the men who wrote the suggestions on this subject. Such work represents real progress on one of the vital problems confronting our organization.

The authors are entitled to congratulations and to the thanks of the entire organization.

The suggestions are interesting, instructive—yes, and entertaining, too. They are expressed in plain language, are decidedly to the point, contain the essential elements of safe conduct and practice, possess solid food for reflection, and many of them are full of the personality of the writers themselves. In constructive safety imagination they radiate hope, courage and confidence—they show the mental attitude toward life of men who face the sun with both hands wide open for all the blessings that life can give, and by habits of right living, by the power of right thinking, by the constructive, positive attitude of the mind they attach to themselves those blessings which are worth while.

The enthusiastic response with which this Bulletin has been greeted is an object lesson to everyone interested in safety first work and hence is a beckoning example to all who would be safe and sound, who would serve steadily, live happily and cross the river at the end triumphantly, to encourage such good work.

The convincing character of the suggestions should powerfully aid in awakening all of us to our instant duty and responsibility, since such constructive thinking should stimulate and inspire in the employees a new loyalty to those principles of safe operation which are the bedrock of accident prevention.

To every employee today, as well as to the Management, the word "accident" means much more than the revenue loss which invariably follows. Perhaps the clearest understanding of what accidents mean may be obtained by thinking for a moment of the human aspects of the subject. Surely no one is unwilling to do one's utmost to prevent unnecessary pain, suffering, anguish and hardship—all the toll of accidents.

It is doubtless the greatest desire—the most solemn wish and hope of both the officers and employees that each day's work may end without misfortune, accident or disaster to the passengers and others who use the service, or to those who use the streets in which the cars run. All should be faithful and true to this ideal.

Frequently, however, very serious accidents happen. Invariably they are the consequences of unguarded moments and carelessness—a hazardous chance-taking—a thoughtless violation of rules—a reckless disregard of ordinary caution—and then a life is lost or a limb is gone. It is then that the shadows fall and fall heavily. All the remorse imaginable cannot lighten the horror of such a tragedy nor lessen the grief of those concerned and affected by it.

It is obviously a simple matter to explain how an avoidable accident happened after it has come to the stage of results. But the greatest function of good railroading is to know what must happen on the basis of an existing situation, and to know it long enough in advance to apply preventive measures.

We should all be proud of our organization. It is a great public utility, furnishing service **for** the public and the entire public. Anything, good or bad, that affects its revenue—such for instance as the tremendous burden of accident cost, is of vital importance to the public and its employees. Enormously increasing costs, without proper compensating revenues demand that one of two things be done. First, raise the fares—or second, reduce the service by abandoning non-profitable lines and making any number of operating retrenchments to decrease operating expenses, and when that is done, the riding public is no less concerned than when the fares are increased.

My purpose in speaking of this is to emphasize the necessity of eliminating the waste represented by avoidable accdents, for it is plain that to the extent to which such accidents are prevented that leak is stopped.

The Safety Bulletin No. 1 stated "the car rider is paying many thousands of dollars for something he does not want, something he is trying by every means to avoid but is nevertheless obliged to accept and pay for. That thing is carelessness."

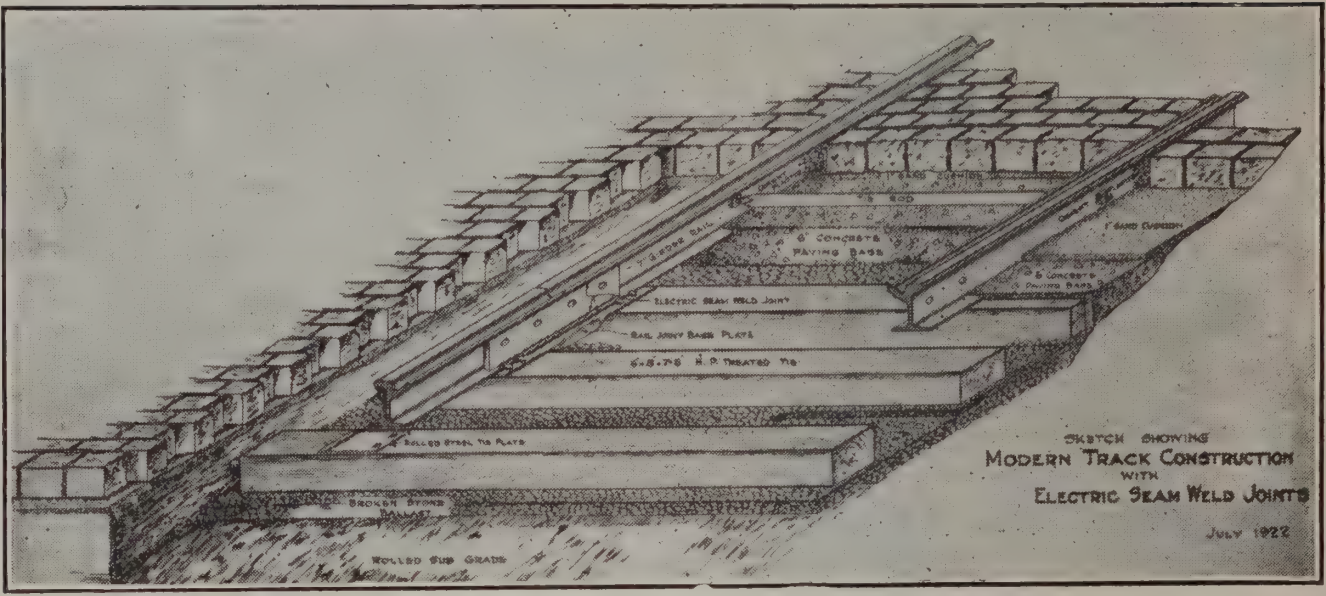
Repetition is sometimes necessary for lucidity of thought, therefore I wish to stress the fact that all the Bulletins, all the notices, all the ways and means by which enthusiasm may be stirred up, mean nothing without the sustained co-operation of all employees.

Each employee of the Company, whether high or low in the order of responsibility, should recognize the necessity of working **with** every other employee to the fullest extent possible to prevent accidents. So let's all get together and put our shoulders to the wheel. The means are here, and the end will surely justify them.

Of course it should always be remembered that it is not upon statements of general principles of safe conduct and operation, but upon their application of these principles that both the employees and the operation will be judged.

It follows from this fact that two things are required: **On the part of the mind, a firm grip of safety principles; on the part of the will, a constant adhesion to them in action.**

MODERN TRACK CONSTRUCTION



Modern track construction is carried on with relatively few men and a large amount of efficient machinery. The following article explains the several steps necessary in this work.

It is gratifying to note that Mayor Curley recently expressed his opinion "that the Boston Elevated Railway had advanced more rapidly with the use of modern equipment in the performance of its work than the city or other corporations, and there was no doubt that the Boston Elevated Railway was accomplishing its work efficiently and economically by the use of same."

Modern methods of track building are carried out about as follows, when it is possible to do so:

First—Portable crossovers or temporary tracks are installed in order that the regular operation of cars may be interfered with as little as possible.

Second—The paving is plowed out with a machine built for this particular purpose, and by its use in one-half an hour more paving blocks are loosened so that they can be loaded, than would be possible to bar out in a much longer period with 100 men.

Third—After the paving blocks have been removed from the track, and either taken away or piled up alongside the track for recutting, the old rails are cut into lengths proper for handling with an oxyacetylene torch and a crane car is used to tear up the old track.

Fourth—After the track has been torn up an electrically operated shovel is used for excavating the track trench to the proper depth. The material is loaded on trucks or cars and taken away, so that it does not have to be handled again.

Fifth—After the electric shovel has worked for a short time, a steam roller appears and starts to roll the bottom of the track trench, in order to compact the earth as much as possible.

Sixth—This operation is followed by the delivery of ties, rails, tie plates, etc., and the track is put together in the bottom of the trench.

Seventh—Crushed stone is then delivered either by trucks or by dump cars, and the track is raised to the proper level and surfaced with crushed stone.

Eighth—The crushed stone is tamped hard in place until there is practically no movement in the track when cars pass over it, by means of pneumatic tie tamping machines. The compressed air is furnished by a large compressor, mounted on an old passenger car, in which is also located a large storage tank, repair parts for the tamping machines, etc. From eight to twelve tamping machines can be operated by one of the air cars, so called, and the work of tamping can be done at not only a much lower cost by the use of the pneumatic machines, but also at a minimum expense of energy by the men.

Ninth—When the track has been properly surfaced and lined, a concrete mixer will appear on the job, accompanied by a machine called a loader or distributor. This loader machine operates behind the concrete mixer and by its use it is possible to have three batches of concrete in progress at one time, that is, one in the loader or distributor, one in the skip of the concrete mixer, and the third in the drum of the concrete mixer being mixed. These two machines require very few men to operate them, and it is possible to install a large amount of concrete per day with this outfit. These machines are mounted on car wheels and are self-propelled.

Tenth—The paving block is then laid by hand on top of the concrete base, and after it has been properly rammed, the concrete mixer again appears with its accompanying loader, and the paving is grouted.

About the only operation in track building that is performed by hand at the present time is the driving of spikes and the handling of paving blocks. It has not been possible to devise a machine for picking up the paving blocks from the track after they have been plowed out, or a machine for laying them.

However, the Boston Elevated Railway, in common with other railways, is experimenting with a compressed concrete paving, which, if successful, will take the place of granite block paving. Compressed concrete paving has been used successfully in Detroit and other cities. Carefully selected hard crushed stone of fairly large size is laid on top of the ballast and rolled by the steam roller until it is compressed as much as possible. It is then filled with grout and again rolled until it is about ready to set, resulting in a hard, homogeneous mass of concrete.

The Boston Elevated Railway tracks are usually laid with wood ties, although some steel tie solid concrete construction has been installed as an experiment. In the middle west the soil conditions are such that a concrete base is required to hold up the track and paving, and in such sections steel ties are generally used and are imbedded in the concrete. In New England, however, the soil conditions are such that solid concrete construction is not absolutely necessary. Where tee rail instead of girder rail is used and a shallow paving such as bitulithic, asphalt, compressed concrete, or brick is used, it is considerably cheaper to build the track with steel ties and solid concrete construction, but whether this type of construction will last as well as track built with wood ties laid in ballast, is a question that will require the test of time.

For many years the Boston Elevated Railway has welded the joints in its tracks by one method or another, welding giving better results and providing for a longer life than can be secured by bolted joints.

Practically all types and methods of welding have been tried during the last twelve or fifteen years, including the cast weld joint, the Lorain bar weld, the Lorain butt weld, the Thermit weld, and at present the electric seam weld.

Undoubtedly many persons have observed the joints being welded by the electric seam welding method, that is, they have noticed the peculiar green light which occurs when this type of welding is being done.

This type of welded joint is most generally used today throughout the country, as it can be produced at a lower cost—the machines used for the purpose are small and easily handled—the welding can be done at practically any period of track construction—the work can be done by the railway company's own employees after they have received the proper training—and to date this type of welding has been perfected to such an extent that there is absolutely no doubt that a joint can be produced by this method equal to any of the other forms of welded joint named above.

The weakest part of the track structure is at the joint in the rails. When the track is worn out so that it is necessary to rebuild it, the rails half way between the joints are usually still in such condition that they could have been used for a few years more, but at the end where the joints occur they are usually broken, battered and bent to such an extent that it is impossible to continue the track in use any longer, and it is necessary to tear it up and build a new one.

For this reason the welded joint is used with a view to making the joint as strong or stronger than any part of the rail, which will result in the rail wearing down evenly at the joint the same as it does in the center of the rail, and thereby prolong the life of the track several years.

This result, when accomplished, will, of course, in time result in a saving of money when it is understood that girder rail paved track laid in city streets costs practically $50,000.00 per mile of single track.

WINNERS

The folks we call "Successes"; what's the secret that they know?
What sort of magic food is it that makes them flourish so?
There isn't any secret which you cannot figure out,
Nor any strange enchantment which is bringing them about;
For when you come to study them the answer's quickly guessed,
They worked a little harder and they planned a little better
And they dreamed a little truer
Than the rest.

They weren't afraid of drudgery when drudgery was wanted,
They faced the little grimy jobs with spirit quite undaunted,
They didn't like that sort of task, they didn't find it fun,
But they kept grinding at it till they knew that it was done;
And thus their strength and courage grew to meet each larger test,
They plugged a little harder, and they toiled a little longer,
And they thought a little clearer
Than the rest.

A little more of effort and a little more of stress
Would often alter failure into glorious success,
But the failure blames misfortune for his lack of fame and pelf,
He blames the times, he blames his job—but never blames himself;
Yet the secret of the folks who win is easily expressed,
They fight a little harder, and they act a little quicker,
And they stick a little longer
Than the rest.

Yesterday's successes belong to yesterday, with all of yesterday's defeats and sorrows. The day is Here. The time is Now.

OPERATION RESULTS

	1921		1922	
	Balance after cost of service	Deficit after cost of service	Balance after cost of service	Deficit after cost of service
July		$134,729.96		$104,149.97
August		182,525.43		217,128.55
September		149,395.98		43,048.24
October	$133,178.28		$253,621.08	
November	259,859.67		175,563.07	
Total	$393,037.95	$466,651.37	$429,184.15	$364,326.76

The excess of our receipts over cost of service for the first five months this year, therefore, is $64,857.39.

The average fare for November was 8.802c, and 266,347 more miles were operated in November this year than last year, and 2,312,741 more passengers were carried.

WINTER OPERATION

Just a reminder of the problem which lies ahead of us for three months. Co-operation is never more important than during these three months when we face the task of fighting snow. Let each individual in every department plan to do his best this winter that we may be proud of the results when spring arrives.

EDWARD DANA,
General Manager.

December 11, 1922.

9338.7 #46A

PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

January, 1923

Vol. 2

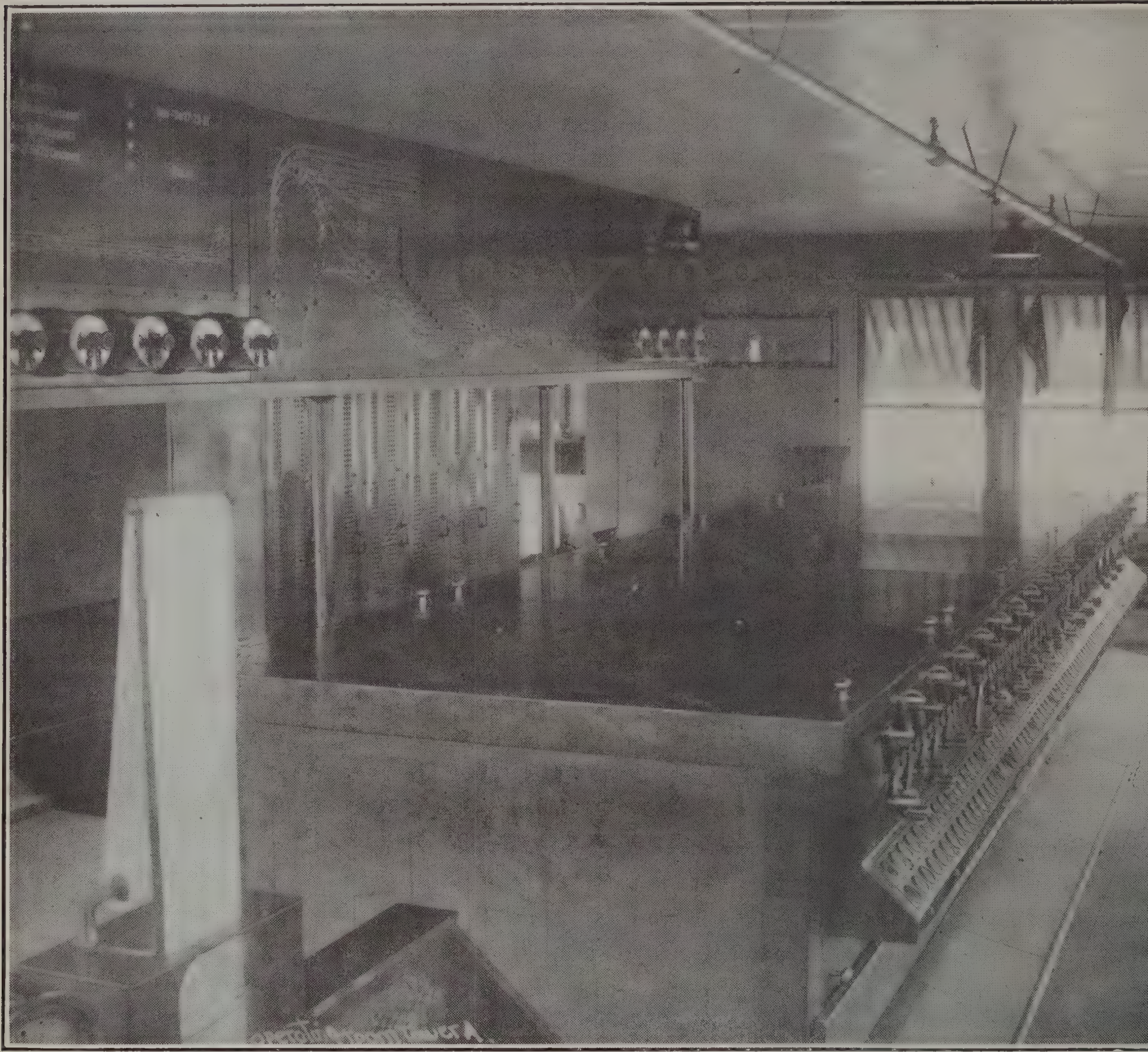
SERVICE
FOR THE
SAFE CAR RIDERS SURE
SATISFACTORY

No. 1

Happy New Year

1923

Look forward, not backward. In some climates New Year's Day arrives in midsummer. How much more inspiring it is to have our New Year's Day in the period of greatest cold, shortest days and of the stormiest weather. Then can we best address ourselves to resolutions of hope and determination with the visions of spring, summer and fall ahead of us. The factors in the operation of this railway will be similar to other years, but let us secure renewed interest out of the numerous changes in conditions which we will meet in 1923, and when it is past take pride in having rendered notably better, safer, more courteous, intelligent and efficient service to the car riders of Metropolitan Boston.



SIGNAL SYSTEM ON RAPID TRANSIT LINES

One of the important details in the operation of the Road necessary for the safe and expeditious transporting of passengers is the signal and interlocking system on the Rapid Transit Lines.

When the original Elevated Line was opened in 1901 the latest and most improved signal system known at that time was installed, and gave very satisfactory service for many years. Constant improvement and development of the signaling art, together with our demand for increased facilities and additional safety of operation, have made that installation so inadequate and antiquated that a change to more modern signaling became necessary, and the work of changing the system over from the two-position semaphore signal originally used to the new three-color light type has been going on for some time past, one section at a time.

Incidentally the interlocking equipment in use at the several junctions and terminals has undergone corresponding improvement and the latest type of interlocking machines, electro-pneumatic switch mechanism and color light signals have already been installed at some of these points and are planned for others.

The cut shown herewith is a good view of the new type of interlocking machine and illuminated track diagram in Tower "A," located at Sullivan Square on east corner of shop, and is one of the busiest places in the entire Rapid Transit Division. The interlocking machine is of standard model 14, electro-pneumatic type, equipped with A-C magnets for all lock and indication purposes, and made up as follows:

47 levers for 47 switches—3 double slips, 1 single slip
26 levers for 83 signals
1 lever for bridge

Total 74 levers working
1 lever spare
4 spare spaces

Total 79 levers in frame

The length of the interlocking machine is 17 feet, 3 inches.

A total of 797 trains or 3,560 cars pass this tower in the course of a day.

By means of these interlocking machines the track switches and signals at all junctions and terminals are easily and quickly operated, so that the movement of trains is controlled with speed and safety, and in a manner tending to reduce to a minimum the possibility of human failure.

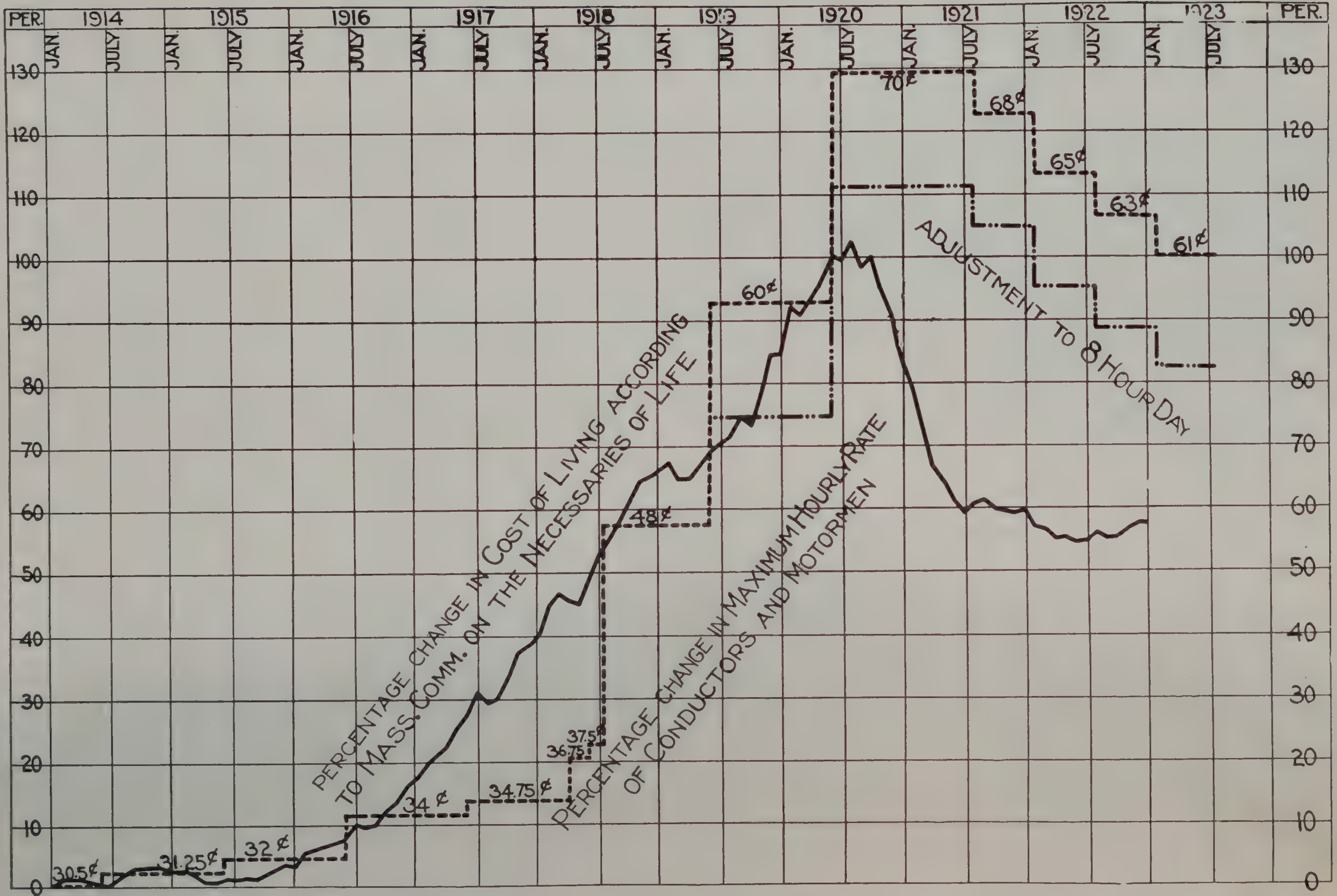
Also interlocking devices in the machines at Towers "A" and "C" control the opening of drawbridges at Charlestown and Everett, making it impossible for bridges to be opened while a train is approaching.

On the entire Rapid Transit Lines there are 11 interlocking plants, 126 power operated switches, and 536 block and interlocking signals.

The electrical and mechanical mechanism connected therewith is cared for by 34 interlocking maintainers, and the towers are operated by a force of 42 towermen.

Another interesting device in connection with the operation of elevated trains is the Telautograph, an electrical instrument by which matter written with a pencil-shaped instrument on a metallic plate at the Causeway Street Tower is automatically re-written in the Dispatcher's and Starter's offices at Sullivan Square and Towers at Sullivan Square and Everett. This gives advance information of the approach of all trains, showing train number, route and time, thereby giving Dispatcher and Starters an opportunity to fill in gaps and keep train crews on time.

The total cost of interlocking and signal system on this railway is $950,000.00



COST OF LIVING CURVE AND MAXIMUM CONDUCTORS' AND MOTORMEN'S RATES

1913-1923

THE JANUARY WAGE SCALE

In July, 1920, Mr. Doherty made an award of 70c per hour as the maximum rate for conductors and motormen.

In view of the fact that the cost of living as published by the Massachusetts Commission on the Necessaries of Life has of late months shown an increase, attention has been directed to the reduction in the hourly rate mutually agreed upon.

The chart which is printed herewith should be the basis upon which consideration of this subject rests. Much harm can be done by misunderstanding of the important facts relating to this subject. As in the discussion of the eight-in-ten hour law in the Bulletin issued March 15, 1921, it is the desire of the Management that all questions be considered fairly, intelligently and upon the facts.

Directly following the Doherty award, the cost of living rapidly declined, and while during the last few months it has increased, nevertheless today it is about at the same point as it was in 1918, when the War Labor Board made the award of 48 cents per hour. Examination of the chart also indicates that the War Labor Board and the Endicott Award raised the rate per hour to the cost of living line, and the Doherty award raised the rate slightly in excess of the increase in cost of living.

Since that award, the agreements mutually entered into have provided a margin between the downward fall of cost of living and the decrease in rates, so that today, allowing for the change in hours per day, the maximum 61-cent rate is 24 per cent. above the cost of living line.

The Trustees referred to the reduction being less than the fall in the cost of living as follows:

1. The fact that although a substantial decrease has already taken place in many items affecting the cost of living, that cost is not yet upon any settled basis, so that it is peculiarly a fitting time to put in practice the belief of the Trustees that to be consistent they should be as deliberate and conservative in following the cost of living when it is upon a downward trend as in following it when it is in an upward movement.

2. The fact that they thoroughly appreciate the co-operation that the men have given to the Management during the past year. The existence of this spirit has financial, as well as other value, in the conduct of this service.

3. The fact that as public officials they are in charge of a public business and should be careful not to follow any other rule than that of a full fair wage for work that is earnestly performed.

It would not seem difficult to keep up the spirit of co-operation and service to the car riders under such conditions nor have much concern for a future which has not as yet arrived.

National Thrift week will be observed Jan 17, 23, 1923. The following article is written by a nationally known writer:

HOW TO BEGIN A BUDGET

E. A. Hungerford

Making a budget is about as easy as it is to lie abed in the morning, and about as important as it is to get up and go to work. In fact, going to work is the first requisite in keeping personal or family finances by the budget plan. Without an income there is not apt to be much outgo. And with neither money earned nor spent, a budget is of as little use as a silk stocking north of the Arctic Circle.

Since the usual way to get an income is by diligent labor, "Work and Earn" is set down as the first requisite in taking the budge out of budget.

The second injunction is "Estimate Expenditures in Advance." This is just plain ordinary horse sense which a progressive man would apply to his business as a matter of course. But a family is more important than any business and ought to be operated on as scientific a basis. Estimates should be listed under such headings as Food and Shelter, Clothing, Savings and Investment, Advancement, Recreation, Giving, Miscellaneous.

Having gone this far, it is logical that the next step should be "Spend Sensibly." Roosevelt said "Thrift is common sense applied to spending." Careful expenditure has a lot to do with success in life. It is comparatively easy to earn money and to plan to use it effectively. But to actually control the outgo so that it will not exceed the estimates, so that something will be left for saving and investing—there's the rub.

Buy judiciously. Get what you really need. Don't scrimp on either quality or quantity and sacrifice your comfort or efficiency. Then "Record Expenditures." This will take you only a little time. It will inform you as to how near you come to the budget estimates.

That is about all there is to budget making. But in the experience of many individuals or families, it represents the difference between success or failure in life. Certainly the chances of notable achievement are all in favor of those who recognize the importance of making a budget.

January 17	Wednesday	Bank Day
January 18	Thursday	Budget Day
January 19	Friday	Life Insurance Day
January 20	Saturday	Own Your Home Day
January 21	Sunday	Share With Others Day
January 22	Monday	Pay Bills Promptly Day
January 23	Tuesday	Make a Will Day.

WHAT A FELLOW WORKER WRITES ABOUT THE BULLETIN

The most casual reader must have noted that the character of the bulletin is each month tending to become that of an energizing medium. Comments reach us from different employees showing that there has been an admirable spirit of cooperation and a general understanding of the purpose of the bulletin, with the opportunity it gives for all those interested in the furtherance of better service to work faithfully together. It is this aspect of the bulletin that gives it added importance to employes generally. It is playing a helpful part in our work that is bound to influence us and become a force in moulding our thoughts on the importance of giving the best all round service to the car riders that we can give. Never before has this been truer than it is at the present time. This all spells interest and confidence, and this confidence is given greater effectiveness by the increasing whole-hearted support that is being given to make the place of the car rider first in our work for service, and still better service. No one can look over the monthly bulletins without feeling encouraged and grateful for the information which they give us of operating activities. This bringing together of material of such mutual interest shows that the bulletin is fulfilling its possibilities to a high degree. The increased realization that has grown up of the common cause in which we are all engaged, leads to the hope that all employes will vie with each other in giving us in the columns of the bulletin the benefit of their information and experience in our efforts toward developing the most efficient service for the car rider.

SUGGESTIONS

An employe recently remarked that he was not sure whether it was desired that he make suggestions for improvements which might occur to him.

Let that matter be quickly disposed of.

It is desired that any employe who has a suggestion which he thinks will result in improvement in the operation of this property jot it down and pass it to his immediate superior.

There need be but one restriction in the interest of all; namely, that he shall do this only after subjecting his suggestion to careful reflection as to its practicability when all factors in relation to it have been considered. Study your own thought, subject it to analysis, and talk it over with others who may know something about it, and then if it meets the test, start it along to add its bit in helping the service.

"The world gives its admiration not to those who do what nobody else attempts, but to those who do best what multitudes do well."—*Thomas Babbington Macaulay.*

An old motorman says:

"Responsibility rests on every member of the railway, in the Offices, Shops, on the Cars or Trains, to keep up the good record that has been established by the loyal co-operation of the whole organization."

The only way to have a friend is to be one.—*Emerson.*

Never attempt to bear more than one kind of trouble at once. Some people bear three kinds—all they have had, all they have now and all they expect to have.—*Edward Everett Hale.*

DECEMBER OPERATION

Final figures are not yet available, but revenue exceeded cost of service by approximately $200,000. For the first six months of the fifth Trustees' year revenue exceeded cost of service by approximately $264,000.00. 185,000 more miles than last December were operated, and 8,079,486 five-cent passengers were carried. The average fare was 8.793c.

GOING UP

On Saturday, December 23rd, 1922, 1,416,394 revenue passengers were carried. The energy developed at the power station amounted to 929,585 k. w. hours.

Suppose these passengers averaging let us say 130 lbs., a total weight of 92,066 tons, could be placed upon an inconceivably large elevator platform. It would have to be 80 acres, or three times the size of Boston Public Garden.

Then the k. w. hours generated at the power stations by the burning of 956 tons of coal would be equivalent to lifting this load of passengers 13,399 feet into the air, or more than twice as high as Mt. Washington, New Hampshire.

EDWARD DANA,
General Manager.

January 15, 1923.

9388.744 6A5

PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

FEBRUARY, 1923

SERVICE
FOR THE
SAFE CAR RIDERS SURE
SATISFACTORY

Vol. 2 No. 2

AN OUNCE OF PREVENTION

The idea of the monthly bulletin is to encourage co-operation, provide information about the industry, and to produce better service for the car riders. As this bulletin date arrives I cannot refrain from pointing out to our organization the unfortunate side of our work in the hope that it may help others. Two statements have come to my desk offering a very sharp contrast:

The first is a letter from an employe dismissed because of intoxication on duty and insubordination. He pleads for a chance to return for his family's sake and promises to live up to the rules in the future. He admits he alone is to blame and is sorry for all the trouble he has caused.

The second is the statement of an employe which shows that because he thought he was not given work to which he was entitled he refused to continue at work and stepped off his car at a terminal in the rush hours.

The contrast is right here—If the second man could have but known of the regret of the first man undoubtedly he would have hesitated before he left a car in the rush hour, absolutely indifferent to the rights of the car riders, when his misunderstanding could have been straightened out in the ways devised for doing so.

Fellow employes can do much for the cause of co-operation by their kindly advice in preventing other employes from doing things that injure the service or hurt themselves.

WORKMEN'S COMPENSATION ACT

The Workmen's Compensation Act is a State law. It became operative 10 years ago. The chief object of this Act is to provide a definite scale of payment to employes injured in industry.

The Boston Elevated Railway was one of the first employers in this Commonwealth to insure its employes under this Act, and has continued to carry this insurance to the present time. Before the Workmen's Compensation Act was in existence an employe who sustained an injury had to prove that his employer was negligent in order to be entitled to compensation for damages. Today the question of negligence is not an issue, but the employe must prove that the injury was one arising out of and in the course of his employment.

The benefits under this Act have been enlarged from year to year, and at the present time if an employe sustains an injury arising out of and in the course of his employment he is entitled to two-thirds of his average weekly wages, but not more than $16.00 a week, beginning on the eleventh day after the injury and continuing until he is able to return to work. In other words, the employe receives no compensation for the first ten days of incapacity. He is also entitled to reasonable hospital and medical services for the first two weeks after the date of the injury. In fatal cases where the employe leaves a widow she is entitled to two-thirds of his average weekly wages, but not more than $10.00 a week, for a period of five hundred weeks, but not more than $4,000.00. There are other provisions for dependents of fatally injured employes, which depend upon the facts as they exist at the time of the injury, and which will not be explained in this bulletin as they are more or less complicated. Provisions are also made for the payment of additional compensation in cases where the employe suffers an injury whereby he loses a member, such as a hand, foot, loss of an eye, or the permanent loss of use of a member. In such cases he is entitled to additional compensation, the amount depending upon the particular member injured.

The Workmen's Compensation Act in Massachusetts is administered by the Industrial Accident Board, which consists of seven members, all of whom are appointed by the Governor. The Board's administrative functions may be grouped under two general headings,—decisions on the validity of claims in disputed cases and the prevention of injuries for which compensation may be claimed. In the event of an employe and the insurance company being unable to reach an agreement on the validity of a claim either the employe or the insurance company may petition the Industrial Accident Board for a hearing. These hearings are held before a single member of the Board, and should either party desire to appeal from the findings of the single member, application may be made for a hearing before the full Board. The findings of fact made by the Industrial Accident Board are final, but if there is a question of law involved appeal may be made to the Supreme Judicial Court.

All employers in this Commonwealth that desire to come under the Workmen's Compensation Act *must* insure their employes with some insurance company licensed to write this class of insurance by the Commissioner of Insurance. The Boston Elevated Railway insures its employes with the Transit Mutual Insurance Company, which has adopted a very liberal, but sound, business policy in the handling of cases coming to its attention. There is a spirit of co-operation between the employes, the Boston Elevated Railway and the Transit Mutual Insurance Company which is most desirable. In cases where the validity of claims is in doubt the insurance company has construed all cases in favor of the employe. Payments are always made promptly to employes. At the beginning of every year the Boston Elevated Railway pays a premium to the insurance company to provide insurance for all employes. No contribution by the employes is allowed for this class of insurance, the employer paying the entire premium.

The foregoing statements do not purport to cover all the provisions of the Workmen's Compensation Act, but it is the intention to bring before the employes information which will be of assistance to them and a knowledge of the fundamental principles of the Workmen's Compensation Act.

Should any employe desire more detailed information concerning any phase of this subject he may telephone to or call at the office of the Transit Mutual Insurance Company.

SERVICE APPRECIATED

We recently received the following letter which certainly shows co-operation.

> "Dear Sir:—It is a pleasure to see a job well done and to tell of it. The work of conductor —— on a recent trip impressed the writer as about the best he has seen on your road.
>
> "This man called his stations so that they could be clearly understood even at the ends of a crowded car. He succeeded in moving his passengers away from the door by tact and firmness, speaking directly to individuals where necessary. He materially hastened the loading and unloading of passengers by his alertness and attention to his job.
>
> "I realize that none of these things are particularly striking in themselves, but altogether they made a marked impression. I venture the belief that the good work of —— has already been noted by his superiors.
>
> "It seems to me also that there has been a considerable improvement in the morale of the car men on the whole system and in the intelligent handling of their various jobs during the past few years.
>
> "Sincerely yours,"

BLAZING THE TRAIL

Man has ever sought to rend the veil of the invisible. Indeed, great discoveries seem to find almost universal origin in the insistent urge toward the unknown. So it was with the inventions of the electric battery, the dynamo, and the electric light. Their evolution bears ample testimony to man's tireless pursuit of truth in nature. The romance of electricity began over twenty-five centuries ago and how grudgingly this most potent of physical forces has revealed its identity and yielded up its usefulness is suggested by the following condensed historical outline.

Epoch of Mystery

B. C. 600 THALES, philosopher of ancient Greece, notes the property of amber, when rubbed, of attracting light objects. Because of its suggestion of sunlight, the Greeks named their translucent, golden amber, "elektron," from which "electricity" readily descends.

About the time of Thales, Aristotle is reported to have said "The stone has a soul since it moves iron." It is supposed that he referred to the lodestone, or particular variety of iron ore called "magnetite." Thus we find the origin of the terms "magnetism" and "magnet."

In spite of the high order of culture and intellectual development possessed by the Egyptians and the Romans, they do not appear historically to have contributed to the science of electricity.

A. D. 1600 GILBERT, of the time of Queen Elizabeth, opens another era in electrical discovery by observing that the magnet attracts iron only, while amber attracts all objects indiscriminately. Then followed experiments by Von Guericke, Gray, Von Kliest and others over a period of a century and a half until

1751 FRANKLIN, in addition to his spectacular demonstration with kite and key that lightning is a manifestation of electricity, discovered the positive and negative characteristics of electricity and invented the lightning rod.

Epoch of Experimentation

1796 VOLTA, a professor of physics, invented the electric battery which produced electricity chemically and which was the only practical source of electrical energy for over half a century thereafter; hence volts, voltage, etc.

1809 DAVY, English nobleman and scientist, produced an electric arc between two sticks of charcoal. Other experiments followed by Oersted, Faraday, Barnard, Schweigger and Sturgeon, chiefly concerning phenomena of electro-magnetism.

1831 FARADAY announced his epoch-making discovery that electricity can be produced from magnetism; a discovery upon which the construction of every electric dynamo depends. Then followed Pixii, Elias, Hjorth, Pacinotti, Siemens, and Jacobi, with applications of Faraday's experiment until, in 1870, steam engine driven dynamos became practical.

Epoch of Utility

1870 GRAMME, LONTIN, WALLACE, FARMER, BRUSH, THOMSON, HOUSTON, BURGIN and others announced systems for illumination by electric arc lights. As early as 1873 a factory in Paris was permanently lighted by electricity, but the great popular movement dates from 1878.

1879 EDISON, whose name is now synonymous with modern theory and practice, produced the first practical incandescent lamp with a complete system for its use. The first central station employing the "Edison System" was erected in London in 1881-1882 and was followed by two developments by Mr. Edison in 1882, one, the first central steam station in the United States, in New York City, and the other, a hydro-electric station of twelve and one-half kilowatts capacity at Appleton, Wisconsin, which is supposed to be the first practical application of water power in the electric lighting field.

The foregoing is merely the briefest outline touching the long trail of discoveries leading to the utilization of electricity for purposes of light and power. Since 1832, when Pixii made the first dynamo, the size of electric generating units has increased to the present maximum of 90,000 h.p., and, in the United States alone, there is now over 20,000,000 h.p. of generating capacity installed in central stations, representing an aggregate investment of over $5,000,000,000. Today the central power station represents the heart of the modern industrial community, and the men who blazed the way to this consummation deserve the respect and appreciation of the generation which benefits from their many years of patient research.

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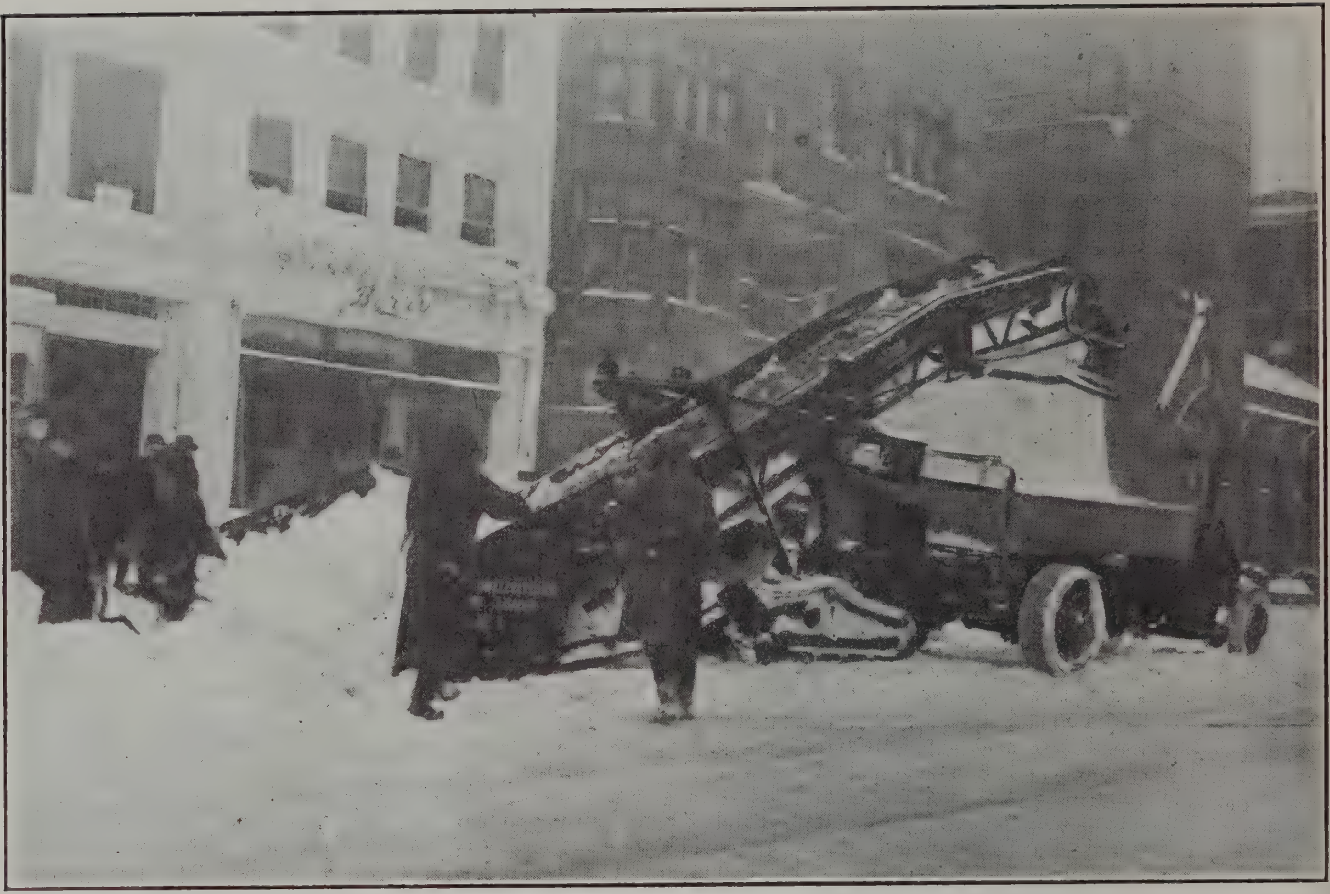


THE NEW SNOW LOADER

In preparation for this year's storms we purchased one of these gasoline operated snow loaders for use in removing snow. The results were very satisfactory and we have purchased and received another.

The snow loader is operated on a tractor, pushing a scoop forward into the snow piles and with the same gas that operates the tractor a belt conveyor is operated which lifts the snow up over the motor truck, which is kept backing towards the tractor and the snow is dropped into the truck from the end of the conveyor.

We can load a motor truck in 45 seconds with this arrangement, which has helped in keeping clear the city streets, for which we have taken the responsibility of snow removal this year.

MISSING

1575 uniformed men did not have a single miss in the year 1922.

All credit to these men.

To be on time is fundamental in railroading.

Let the spirit of co-operation and interest in the service bring into this list in 1923 those who were not in it last year and who desire to be known as **real** railroad men.

JANUARY OPERATIONS

It has been many years since weather conditions have been as severe as in January, 1923. Never, however, have such weather conditions been coupled with as great a traffic on the cars and on the highways. The revenue passengers for January exceeded any previous record—a total of 33,368,466, of which 8,351,759 were 5c passengers and the average fare 8.748c.

167.389 more miles were operated than last January and more would have been operated had it not been for the losses occasioned by the storm and the traffic congestion which followed the storm, making impossible the operation of schedules because of slow movement.

The snow expense to date has approximated one quarter of a million dollars.

Revenue, however, exceeded expenses by $96,725.10, and the sum at present available for repayment to cities and towns on July 1st, amounts to $465,929.18.

Car service employes can do much to prevent delay by cautioning passengers not to overload and attempt to squeeze into cars carrying all that the car can comfortably hold. It simply means added delay and discomfort and much of this can be avoided by energetic action on the part of employes.

Comparative Division of Receipts and Expenditures

	1922	1921	1920	1919	1918	1917
Total Receipts	$32,699,176.37	$33,277,025.53	$34,031,636.44	$29,498,582.82	$21,062,692.82	$19,818,407.01
OPERATING EXPENSES:						
Wages	$14,772,340.42	$15,563,255.53	$17,216,445.20	$15,539,105.59	$11,007,362.35	$8,988,580.99
Material and Supplies	2,903,650.98	3,093,934.69	3,310,858.94	3,640,065.60	3,248,317.15	2,269,099.61
Injuries and Damages	555,355.59	518,249.02	640,165.04	701,907.28	792,783.96	834,981.76
Depreciation and Renewals	2,004,000.00	2,004,000.00	2,004,000.00	2,004,000.00	1,184,670.00	320,000.00
Fuel	1,853,111.76	1,663,617.75	2,597,652.93	1,815,260.94	1,762,963.86	1,134,461.92
Total Operating Expenses	$22,088,458.75	$22,843,056.99	$25,769,122.11	$23,700,339.41	$17,996,097.32	$13,547,124.28
Taxes	$1,587,186.83	$1,546,758.15	$1,142,987.28	$1,045,502.36	$917,515.49	$884,623.01
Rent of Leased Roads	1,233,480.52	2,679,694.72	2,638,561.86	2,598,686.93	2,575,311.13	2,488,783.16
Subway and Tunnel Rents	2,008,414.25	1,963,737.78	1,790,432.30	1,516,047.01	1,235,974.55	993,498.81
Interest on Borrowed Money	1,891,315.57	1,494,258,43	1,514,963.98	1,555,790.06	1,302,157.14	1,174,572.22
Miscellaneous Items	65,016.14	54,707.59	59,067.65	60,346.93	22,343.21	12,299.67
Dividends	2,413,115.23	1,523,367.00	1,463,668.50	1,403,970.00	658,235.00	835,779.00
Total Cost of Service	$31,286,987.29	$32,105,580.66	$34,378,803.68	$31,880,682.70	$24,707,633.84	$19,936,680.15
Loss for Year	....	....	$347,167.24	$2,382,099.88	$3,644,941.02	$118,273.14
Gain for Year	$1,412,189.08	$1,171,444.87	....	....	....	....
Revenue Passengers Carried	356,593,942	337,252,080	335,526,561	324,758,685	348,664,700	381,017,388
Tons of Coal Consumed	273,441	215,871	258,087	287,670	281,677	270,452

TEAM-WORK

By Edgar A. Guest

It's all very well to have courage and skill
And it's fine to be counted a star,
But the single deed with its touch of thrill
Doesn't tell us the man you are;
For there's no lone hand in the game we play,
We must work to a bigger scheme,
And the thing that counts in the world today
Is how do you pull with the team?

They may sound your praise and may call you great,
They may single you out for fame,
But you must work with your running mate
Or never you'll win the game;
For never the work of life is done
By the man with a selfish dream,
For the battle is lost or the battle is won
By the spirit of the team.

It is all very well to fight for fame
But the cause is a bigger need,
And what you do for the good of the game
Counts more than the flash of speed;
It's the long, long haul and the dreary grind
Where the stars but faintly gleam,
And it's leaving all thought of self behind
That fashions a winning team.

You may think it fine to be praised for skill
But a greater thing to do
Is to set your mind and set your will
On the goal that's just in view;
It's helping your fellow man to score
When his chances hopeless seem,
It's forgetting self till the game is o'er
And fighting for the team.

—From Southern Public Utilities Magazine.

Contact!
"That's what counts!"

The daily contact between employes of this railway and the million car riders is as important in providing satisfactory service as keeping the trolley wheel in contact with the wire.

A public service requires alertness to do everything possible for the comfort, convenience and safety of those riding in cars or at stations. Employes who adopt a cheerful attitude towards those with whom they come in contact during the day will accomplish more towards making this railway appreciated than can be done in any other way.

Try and make it easy for car riders to find their way about. Show your interest in the service they are receiving.

FEDERAL INCOME TAX RETURNS

At the request of the Collector of Internal Revenue the following suggestions are called to your attention:

1. Every taxpayer should, without delay, assemble the accurate figures of his income and expenses called for by the income tax blank, which contains full instructions.
2. Every taxpayer should prepare his own return as far as possible before consulting employes of the collector's office.
3. Every taxpayer should file his return as early as possible.

Edward Dana,
General Manager.

February 20, 1923.

9388.7446A5

PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

MARCH, 1923

Vol. 2

SERVICE
SAFE FOR THE CAR RIDERS SURE
SATISFACTORY

No. 3

COURTESY

Life is not so short but that there is always time enough for courtesy.—*Emerson.*

I will allow no man to outdo me in courtesy.—*George Washington.*

A smile is the light in the window of the face by which the heart signifies it is at home.—*Anonymous.*

The contact with car-riders, whether on its cars, in stations or in the offices, should always be known for its courtesy.

Many patrons hesitate to inform the Management of instances where they have not received courteous treatment. How many of such there are we do not know.

We do know, however, that a certain number have felt discourteous treatment so keenly that they have called our attention to it.

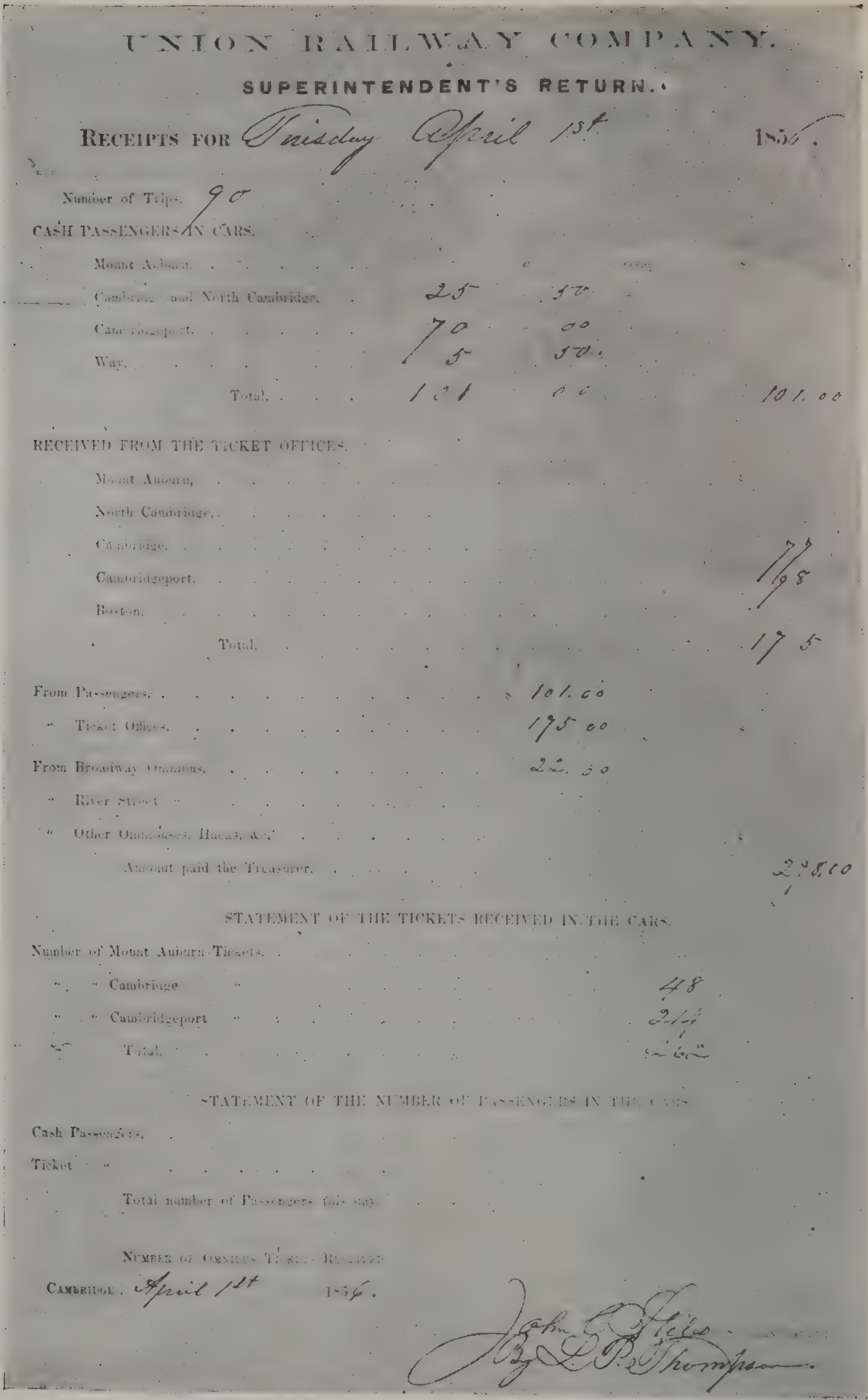
This number can be reduced and ultimately eliminated and then we will have accomplished much.

The total number of complaints against employes for discourteous treatment has been reduced as follows:

Year	1919	1595	
"	1920	1529	
"	1921	1421	
"	1922	1357	14% decrease

This is of such importance in the rendering of service to car-riders that Division Superintendents each month call in all those against whom complaints have been registered during the previous month and point out the requirements of the service.

It is confidently expected that in 1923 the record will be improved.



UNION RAILWAY COMPANY.

SUPERINTENDENT'S RETURN.

RECEIPTS FOR Tuesday April 1st 1856.

Number of Trips. 90

CASH PASSENGERS IN CARS.

Mount Auburn.			
Cambridge and North Cambridge,	25	50	
Cambridgeport.	70	00	
Way.	5	50	
Total.	101	00	101.00

RECEIVED FROM THE TICKET OFFICES.

Mount Auburn,	
North Cambridge,	
Cambridge,	77
Cambridgeport.	98
Boston,	
Total.	175

From Passengers.	$ 101.00	
" Ticket Offices.	175 00	
From Broadway Omnibus,	22.50	
" River Street "		
" Other Omnibuses, Hacks, &c.		
Amount paid the Treasurer.		298.50

STATEMENT OF THE TICKETS RECEIVED IN THE CARS.

Number of Mount Auburn Tickets.	
" " Cambridge "	48
" " Cambridgeport "	214
Total.	262

STATEMENT OF THE NUMBER OF PASSENGERS IN THE CARS.

Cash Passengers,

Ticket "

Total number of Passengers this day.

NUMBER OF OMNIBUS TICKETS RECEIVED

CAMBRIDGE. April 1st 1856.

John C. Stiles
By L. P. Thompson

THE FIRST REPORT ON THIS SYSTEM

THE FIRST STREET RAILWAY REPORT

The cut on opposite page is a copy of the first street railway report in New England of the business on the Union Railway Company running between Harvard Square and West Cedar Street, Boston.

On that day, April 1, 1856, the company had six second-hand horse cars, painted green, which had been received from New York.

Mr. John C. Stiles, the first Superintendent, came from Worcester, Massachusetts, having been in steam railroad service, and in the early sixties, was succeeded as Superintendent by Mr. Richard Hapgood, now retired after fifty years' active service, and living in Belmont, Massachusetts.

The Cambridge Subway now carries more than 75,000 people in and out daily over the route of this first street railway line.

"THINK IT OVER"

"Safety First" or Eternity,
The Pawn of a million years,
Why take a chance in your hurry,
And leave your good family in tears.

'Tis better be sure than be sorry
That's a saying we all learned at school
The man that looks out and is careful
Is the one that first reaches the goal.

"Be sure that you're right," said Abe Lincoln,
He practiced the "Safety First" game,
And "Speed without Haste" is my motto,
And I leave it with you for the same.

—Contributed by a Rapid Transit Motorman.

TRANSPORTATION AN EXPERT BUSINESS

Electric railway men throughout the continent are wide awake to their job, which is transporting people by the latest and best means. In order to get to the bottom of the motor bus question, the American Electric Railway Association recently appointed a committee, composed partly of bus men, to report.

This committee said that the bus has a place in light traffic, but that it should be operated by electric railway managements as an adjunct to their regular service, and not by others as a competitive agency.

"We firmly believe," the report said, "that all of the transportation requirements of any community should be furnished by one agency and that that agency should be the electric railway company. It alone has the trained organization and ripe experience required for handling passenger transportation problems, and the development of any other agency for handling these problems would result merely in a duplication of service which could produce only a higher cost of transportation for the public."

SOME BRIDGES WE CROSS

VIEW LOOKING TOWARDS CAMBRIDGE
EAST CAMBRIDGE VIADUCT

The network of tracks comprising the system operated by the Boston Elevated Railway cross over a total of 110 bridges and large culverts.

These bridges are variously owned by the cities, towns or railroad companies throughout the system.

Two of the principal ones, however, are owned by the Boston Elevated Railway.

East Cambridge Viaduct

The first of these is the East Cambridge Viaduct.

It forms a fitting background for the northerly end of the Charles River basin, which is crossed further to the south by the new Cambridge bridge and is a beautiful and monumental structure.

This bridge was begun in July, 1907, and completed in April, 1912.

It is about 1,738 feet in length, crossing the Charles River on the down stream side of the Charles River Dam, which forms the beautiful Charles River basin.

The bridge is provided with a Strauss bascule lift bridge spanning a 45-ft. draw opening into the lock of the Charles River Basin.

The draw bridge is modern and the openings are protected on both sides by automatic safety devices.

The vast quantity of material entering into this structure can perhaps be better understood when it is stated that there were used in its construction the following quantities of material:

7,425 piles or what would practically de-forest some 75 acres.

Of cement alone there was used 8 train loads of 31 cars each; of stone and sand no less than 22 train loads, and of steel and iron entering into its construction 1 train load.

This bridge has shortened the interval of time between the North Station and Lechmere Square from 10 minutes to 3 minutes, and forms one of the main arteries of travel to the west of Boston.

Its cost was approximately $960,000.00.

19,000 people are transported daily in both directions over this bridge.

MYSTIC RIVER BRIDGE, EVERETT, EXTENSION OF THE ELEVATED

Mystic River Bridge

The Mystic River Bridge on the Everett Extension is also owned and was built by the railway.

This bridge is 1,031 feet in length and is provided with a Strauss bascule lift bridge spanning a 75-ft. draw opening with a clear depth of 30 ft. of water.

In conjunction with this bridge the railway also reconstructed the Malden Bridge in a new location and provided a new draw bridge in the highway as well.

This bridge forms the main artery of traffic to the north of Boston, its cost being approximately $364,000.00, to which should be added the cost of rebuilding Malden Bridge, making a total of $594,000.00.

30,000 people are transported daily in both directions over this bridge.

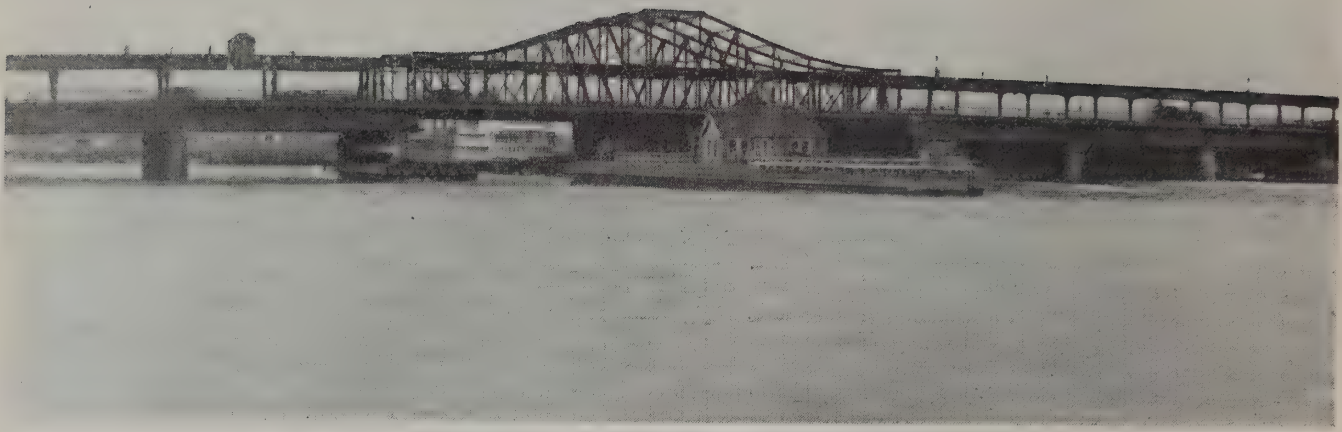
Charlestown Bridge

The Charlestown Bridge over which passes the Rapid Transit trains, forms the main trunk line between Charlestown and Boston, and was built in conjunction with the Tremont Street Subway, under the same Act which authorized the subway and was included in the cost.

The elevated structure passing over this bridge was constructed at the same time and by the same company, that is, the Pennsylvania Steel Company, who constructed the highway bridge.

The drawbridge is a swing structure about 240′ 6″ in length and spanning two clear draw openings in the Charles River 73 ft. in width.

75,000 people daily in both directions are transported over this bridge.



THE CHARLESTOWN BRIDGE

Cambridge Bridge

Cambridge Bridge was constructed in the period between July, 1900, and July, 1907, when it was completed.

This bridge is constructed without a draw and the central portion was designed and constructed exclusively for the operation of Rapid Transit trains and for which this railway paid approximately $630,000.00.

The bridge itself is 1,767½ ft. in length and was built under a Commission representing the cities of Cambridge and Boston.

Its cost was approximately $2,655,000.00.

80,000 people are transported daily in both directions over this bridge.

THE CAMBRIDGE BRIDGE

THE FACTS

Recently in an arbitration case the representative of the men, some of our own men, referred to salaries and wages and because he was misinformed made statements which were manifestly unfair.

This bulletin directed to the subject of "Co-operation" is therefore the appropriate place to present the real facts in order that further misunderstanding may be prevented.

	1914	1922	Inc.	Dec.
Wages paid during year on weekly payroll	$7,448,619.24	$15,471,266.91	107%	
Wages paid during year on monthly payroll	315,256.18	268,925.05		14%
Wages paid during year on salary payroll	212,753.94	156,500.00		26%
Cost of Living index Mass. Com.	102.7	157.5	53%	

It is always wiser and fairer to deal only with the facts.

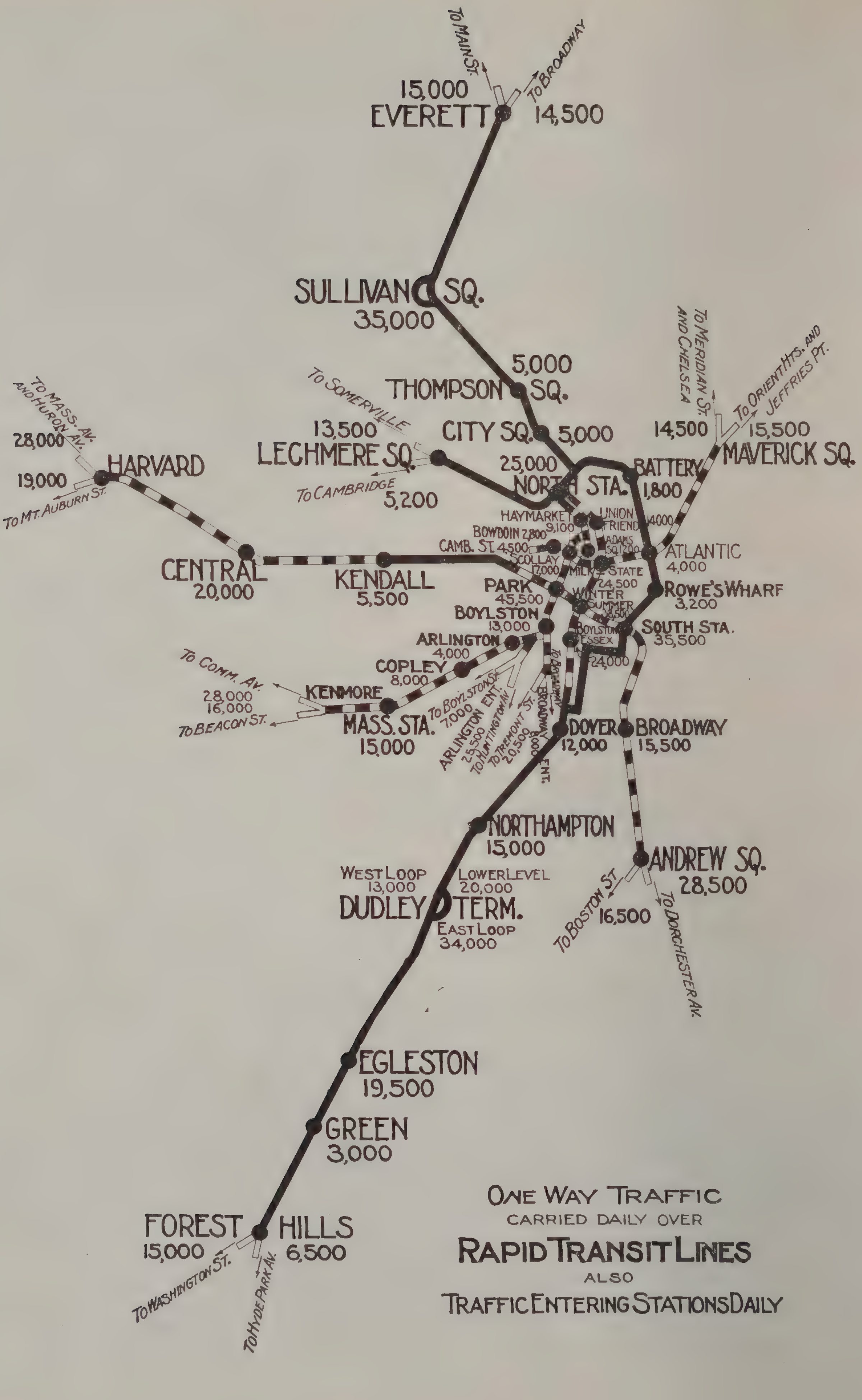
We have striven too hard for co-operation and team play to have our organization misled.

To business that we love we rise betime,
And go to 't with delight.
—*Shakespeare.*

BE HAPPY AND CHEERFUL

Should you swing on your car feeling snappy,
With your day's work about to begin,
Just whistle, or smile, and look happy,
It will help the day's battle to win.

Your trip will be smoother, my neighbor,
As your car bowls along on its way,
You can say, at the close of your labor,
I've been happy, and cheerful all day.
—*Contributed from Department of Audit.*



ONE WAY TRAFFIC
CARRIED DAILY OVER
RAPID TRANSIT LINES
ALSO
TRAFFIC ENTERING STATIONS DAILY

OUR TRAFFIC LOAD

Many employes are not aware of the volume of traffic handled over the various rapid transit lines and of the relative amount of traffic using different stations.

The figures at the terminals indicate one way total daily traffic and the outward traffic is substantially the same.

The figures at the down-town stations represent the total revenue passengers entering during the day and of course include outbound passengers who have been shown at the terminals as inbound traffic. Consequently the addition of all figures would not give the total daily traffic.

During February the average week-day traffic was 1,137,047 revenue passengers. Approximately 12% of the actual mileage is in elevated or subway lines and over this 12% of mileage was transported nearly 80% of the total volume of traffic.

It was thought that this chart would be useful and interesting to our organization.—*See cut on opposite page.*

FEBRUARY OPERATION

	1923	1922
Excess of revenue over cost of service	$148,812.68	$40,595.00
Total revenue passengers	30,151,023	27,144,273
% 5c fare passengers	25.4	19.4
Trips operated	479,633	450,283
Snow expense	$60,359.85	$30,964.07
Average rate of fare	8.73	9.03
Tons of coal consumed	27,155	25,512

One hundred additional No. 5 cars were ordered in February for delivery in five months.

A new 35,000 k.w. turbo-generator was ordered for South Boston Power Station for delivery in November to meet power requirements next winter.

THE REAL GOOD

"What is the real good?"
I asked in musing mood.
"Order," said the Law Court;
"Knowledge," said the school;
"Truth," said the fool,
"Love," said the maiden;
"Beauty," said the page;
"Freedom," said the dreamer;
"Home," said the sage;
"Fame," said the soldier;
"Equity," said the seer;
Spoke my heart full sadly,
"The answer is not here";
Then within my bosom
Softly this I heard
"Each heart holds the secret.
"Kindness is the word."

—*Contributed from Transportation Department.*

Edward Dana,
General Manager.

March 20, 1923.

ALLIED PRINTING TRADES UNION LABEL COUNCIL BOSTON

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PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

APRIL, 1923

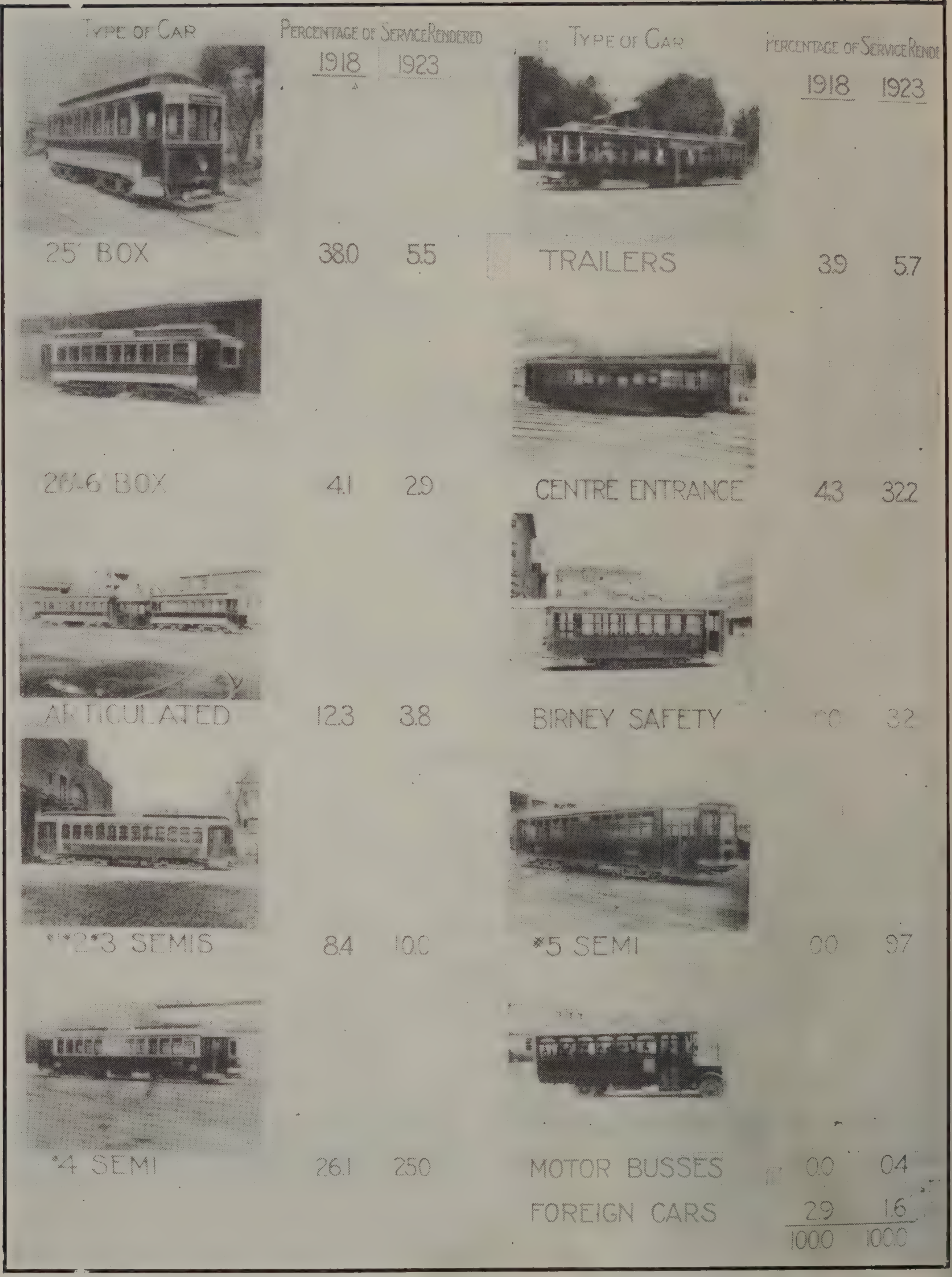
Vol. 2 No. 3

SERVICE
FOR THE
SAFE CAR RIDERS SURE
SATISFACTORY

SPRING

Now that Spring has arrived let us forget all the difficulties of the 1923 Winter. Hope springs eternal in the human heart and there is no time when all our energies respond better than when nature unfolds the variety of returning plant and animal life. It is the time to do our best. It is the time when co-operation should be at its maximum. Let the car rider take note of an added effort to render the best service possible.

Co-operation means securing all the revenue, avoiding accidents, being courteous and considerate of car riders, helping one another, conserving supplies and materials, not wasting time, and doing it every day all of the time.



Type of Car	Percentage of Service Rendered 1918	1923
25' BOX	38.0	5.5
26-6' BOX	4.1	2.9
ARTICULATED	12.3	3.8
*1*2*3 SEMIS	8.4	10.0
*4 SEMI	26.1	25.0
TRAILERS	3.9	5.7
CENTRE ENTRANCE	4.3	32.2
BIRNEY SAFETY	0.0	3.2
*5 SEMI	0.0	9.7
MOTOR BUSSES	0.0	0.4
FOREIGN CARS	2.9	1.6
	100.0	100.0

TYPES OF SURFACE CARS AND PERCENTAGE OF SERVICE OPERATED
MARCH 1918 AND 1923

SURFACE CARS

The cut of the several types of cars and the percentage of miles operated in March, 1918 and 1923, is a most forceful way of calling attention to the improvement which has been steadily under way.

The trustees have ordered since July 1, 1918, 740 new surface cars and 560 are actually in operation today.

One outstanding fact is that in 1918 50% of the surface car service was rendered with 25 foot hand brake box cars or articulated cars and in 1923 at the present moment only 9% of the service is rendered with these two types of cars.

The rolling stock out of service under repair in 1918 amounted to approximately 15% of the cars whereas today only 6% is under repair.

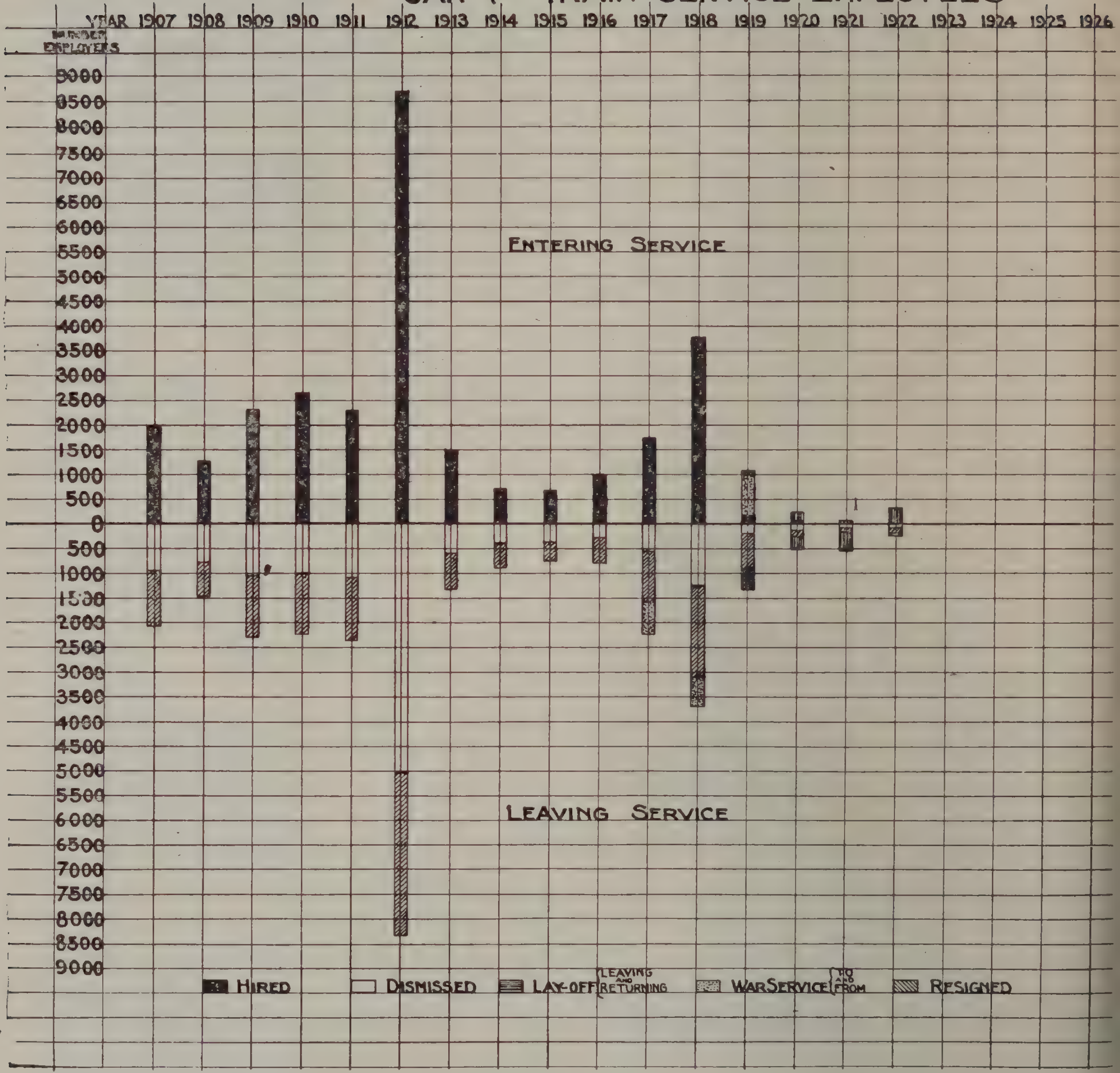
Aladdin's lamp produced results by a single wish but certainly the surface car service from the standpoint of the cars passengers ride in has grown better day by day.

The following table for the full twelve month periods since 1916 discloses an interesting evolution which will be of interest to our organization

PERCENTAGE OF MILEAGE OPERATED

Type of Car	1922	1921	1920	1919	1918	1917	1916
25 ft.	5.7	9.0	16.6	27.5	33.7	34.1	35.2
26 ft. 6 in.	3.7	2.5	4.1	4.0	4.0	3.9	4.1
Art. 40 ft.-50 ft.	6.3	7.4	9.9	11.5	12.3	12.4	8.9
Semi. No. 1-2-3	11.1	11.9	11.4	10.6	9.7	12.3	12.3
Semi. No. 4	27.2	26.7	25.5	26.9	26.7	22.9	21.5
Trailers	5.8	5.9	5.8	5.3	3.8	4.2	3.4
Centre entrance	31.9	28.7	23.3	9.9	5.3	0.4	...
Birney	5.6	6.4	1.4	0.1	...	...	...
Semi. No. 5	.08	...	...	...	...	...	...
Bus	.02	...	...	...	...	...	...
	98.3	98.5	98.0	95.8	95.5	90.2	85.4
Foreign	1.7	1.5	2.0	3.0	3.1	2.8	3.3
Open Cars	...	...	...	1.2	1.4	7.0	11.3
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

CAR AND TRAIN SERVICE EMPLOYEES



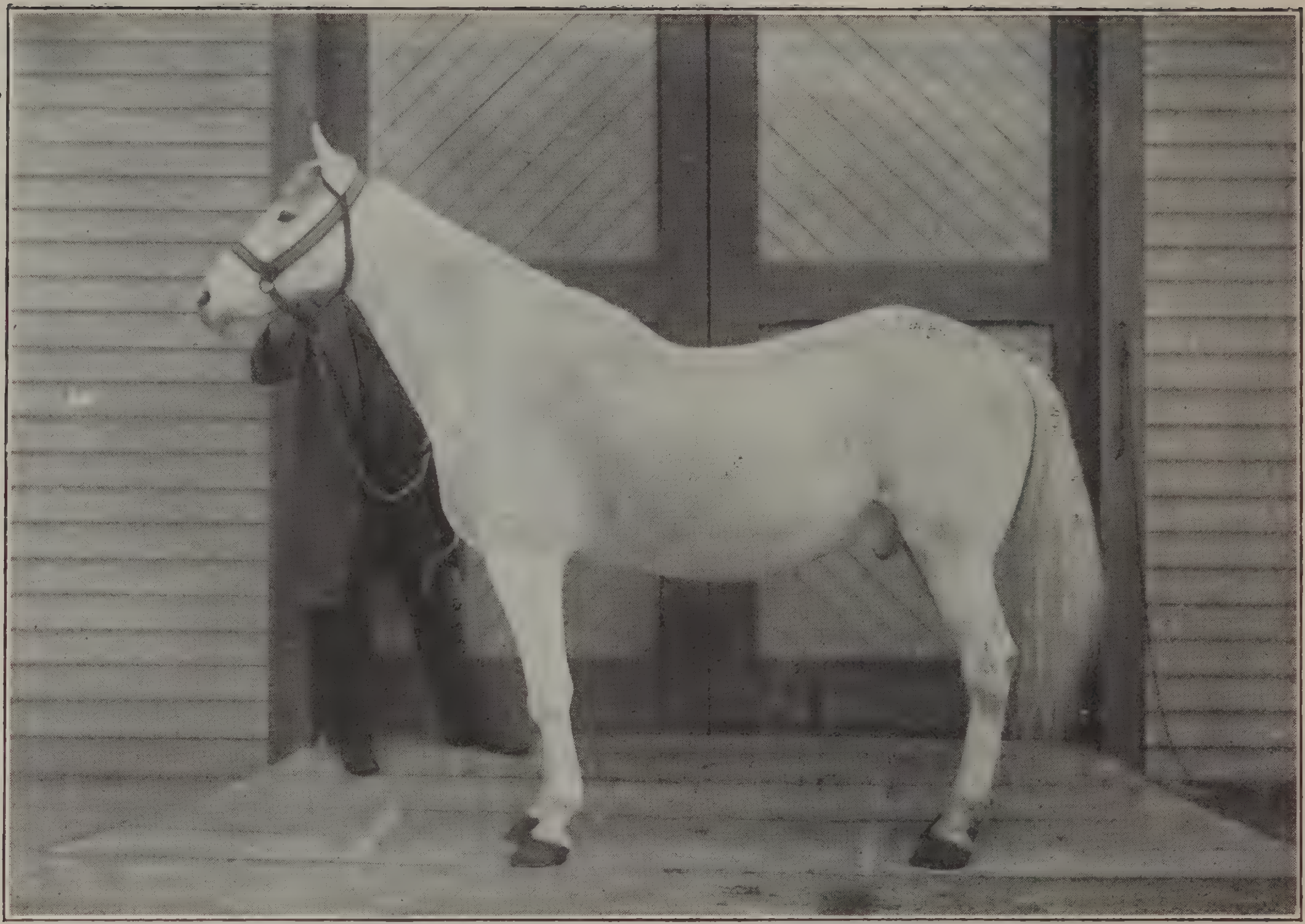
WELCOME

P. J. SHAUGHNESSEY, No. 1880 Entered Service Jan 18, 1919 — **P. W. MERRILL, No. 4452** Entered Service April 3, 1923

It has been a long time since we have been able to welcome newcomers into the service. To be exact, it has been 4 years, 2 months and 16 days.

Our entire organization welcomes those who now join the public service, and sincerely hopes that they will quickly catch the spirit of co-operation and gain the joy that comes from labor well done in a public cause.

The cut opposite is printed to indicate the changed conditions of today as compared with those existing a few years back. An earnest and permanent force spells improved service to the car rider.



OLD BILLY OF THE METROPOLITAN RAILROAD

This photograph taken in the eighties was recently sent in. Old Billy was then 35 years old. Previous to retirement he worked 25 years hauling a car from Brookline to Boston. He never lost a trip from sickness or inability. He actually traveled 125,000 miles during that period.

Mr. Robert William Service once wrote:

> "And each forgets as he strips and runs
> With a brilliant, fitful pace.
> It is the steady, quiet, plodding ones
> Who win in the life-long race."

Old Billy was a steady, quiet, plodding servant of the Metropolitan Railroad for 25 years. He never turned in sick. He was always ready to start on time. He fulfilled the requirements of the public service.

SOME INTERESTING FACTS IN CONNECTION WITH PARK STREET STATION

There are at the present time a daily average of 47,269 passengers entering the Park Street Station from the street. This is slightly less than the number entering at this time in 1918—about 861 a day less.

The following table indicates how the facilities have increased since 1918:

	Loop Track		Through Track	
	1918	1923	1918	1923
Lines	9	8	7	5
Non-rush hour trips	79	80	61	65
Non-rush hour seats	3,802	4,316	2,614	3,640
Rush hour trips	164	186	113	111
Rush hour seats	8,656	10,360	5,176	6,216
Daily trips	1,562	1,781	1,277	1,395
Daily seats	77,544	97,732	55,586	78,120

An increase of 514 seats in normal hours, 1,704 seats in rush hours, and 20,188 seats in the total day provided around the Park Street loop for the same or slightly less passengers entering the station is an improvement in the service.

We are carrying at present at the rate of 390,000,000 revenue passengers for the year. It is interesting to note how long it would take the revenue passengers we carry in a year to enter Park Street single file, each passenger requiring 1 second to pass the fare box. It would require 12 years, 4 months, 13 days, 21 hours, 21 minutes. If a mother carrying a small child was first to pass through and the father was the last, the child would be entering high school before his father entered the station.

IF WE ONLY UNDERSTOOD

If we knew the cares and trials,
Knew the efforts all in vain,
And the bitter disappointment,
Understood the loss and gain—
Would the grim eternal roughness
Seem—I wonder—just the same?
Should we help where now we hinder?
Should we pity where we blame?

Ah! we judge each other harshly,
Knowing not life's hidden force—
Knowing not the fount of action
Is less turbid at its source;
Seeing not amid the evil
All the golden grains of good;
And we'd love each other better
If we only understood.

Could we judge all deeds by motives
That surround each other's lives,
See the naked heart and spirit,
Know what spur the action gives,
Often we would find it better,
Purer than we judge we should
We should love each other better
If we only understood.

—*Rudyard Kipling.*

MARCH OPERATION

	1923	1922
Excess of revenue over cost of service........	$335,937.78	$204,332.08
Total revenue passengers	34,690,068	30,895,899
% 5c fare passengers......................	25.4	19.9
Trips operated	543,889	516,005
Snow expense	$46,443.35	$8,284.44
Average rate of fare	8.73	9.01
Tons of coal consumed	27,371	26,059

Guild Street Elevated shop was closed down during the month, and the new Forest Hills shop is now in use.

Steel is being erected at the Everett shop.

$958,648.35 is at present available for repayment to cities and towns on July 1st next.

EDWARD DANA,
General Manager.

April 23, 1923.

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PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

MAY, 1923

Vol. 2 No. 5

SERVICE
FOR THE
SAFE CAR RIDERS SURE
SATISFACTORY

"So live, that when thy summons comes to join
The innumerable caravan, which moves
To that mysterious realm, where each shall take
His chamber in the silent halls of death,
Thou go not, like the quarry-slave at night,
Scourged to his dungeon, but, sustained and soothed
By an unfaltering trust, approach thy grave
Like one who wraps the drapery of his couch
About him, and lies down to pleasant dreams."—*William Cullen Bryant.*

HONEST EFFORT TO RENDER SERVICE APPRECIATED

The following was printed in the April, 1922, bulletin:

KEEP IMPROVING

Hon. E. Mark Sullivan, Corporation Counsel of the City of Boston in a recent speech, said:

> "The motto of every man dealing with the public is 'Service' and no service however adequate can be satisfactorily adequate if the public fails to appreciate it.
>
> "The American people are fair. They are by every instinct generous. I wish to pay my tribute tonight to Hon. James F. Jackson and his associates for the efforts which they are making to give to this great city a decent and adequate transportation system, and they are enjoying at the hands of the people of Boston today a sympathetic and an intelligent tolerance that I believe few railway managers ever enjoyed in recent years, and the reason of it all is that no man goes to their office inquiring regarding the economics of the railway system without receiving prompt and generous explanation to any inquiry that is put to them."

One year has elapsed, and Mayor Curley at the Copley-Plaza on March 22, 1923, before the New England Street Railway Club, among other things, said:

> "No branch of industry in the life of this nation has been as little understood in the last quarter of a century as has that of street and steam railroading. The street railroad, at least, occupies relatively the same position, so far as the general public is concerned, as does the municipality in which the street railroad operates. The great difficulty in the past has been the inability to secure the necessary funds with which to operate the street railroads. In our own city I have had the proud distinction today, by one of the representatives of our General Court, to be placed in the same category as an enemy of the public, in the crowding of street cars, with Chairman Jackson of the Boston Elevated Public Control Trustees, and I want to say that I have no objection to being placed in that position, because I have a realization of the difficulties that confront him, which are identical with the difficulties confronting every other railroad line operating, either in Massachusetts or in any portion of the entire United States.
>
> "We have had a period of three years when we were confronted with difficulty in securing either material or labor. At the present time we are confronted with the difficult problem of carrying more passengers than it is possible for our transportation facilities, at certain hours of the day, to handle. It calls for courage, it calls for co-operation on the part of men in public life; and if every body of officials connected with the operation of street railroads were exercising the same degree of intelligence in the matter of operation that has been exercised by the Public Control Trustees of the Boston Elevated during the past two years, I do not think there would be any general objection on the part of the general public in any portion of the entire New England States."

REPORT ACCIDENTS CAREFULLY

If an accident does occur be sure to report it in the plainest, clearest manner you can, stating all the facts without any reservations whatever. In spite of painstaking efforts to keep out of Court, we are very often forced there. To protect the revenue, it is necessary to defend a large number of claims brought as a result of accidents for which it is believed that the employes are not to blame. The Court stage setting is not always free from prejudice or sympathy. Before the jury, the impression the employe creates will be favorable, unfavorable or negative, according to the truth and clearness of his report and testimony. Both the Court and Jury look for and expect the whole truth and the clearest possible explanation of an accident from the employes involved in it. It is only when these two elements are present that the best and most favorable impression is possible. Lack of clearness alone, frequently spells the difference between victory and defeat. The Jury turns naturally to and follows the employe who really knows what happened and who can express it in a confident and convincing manner. The Juror is usually an intelligent and plain person. His sympathy is with plain people. Once let him get an impression of doubt or unfairness and he is very apt to distrust the conclusions you seek to impress on his mind.

We assume always that our defense is righteous and that the truth, once properly presented, will exonerate us. At the same time, even in those accidents for which it is plain that neither the employe nor the operators are at all at fault, evidence to support and corroborate the employes' version of the accident is vitally important. Hence it is more important even than knowing that we are not to blame for an accident, to get sufficient witnesses to prove it by more than a mere margin. Therefore, when an accident happens, get witnesses. This requires vigilance, courtesy, sincerity and sympathy on the part of the employes. Cultivate a good feeling between yourself and the car rider. Make friends. Let them know something about the difficult problems of operation. Strike a responsive chord and you will get an answering vibration. Look always to the future, for today's car rider may tomorrow witness an accident and you will want to get his name as a witness. We cannot too earnestly urge all employes to be diligent in obtaining witnesses of an accident as *soon as possible* after its occurrence.

In Bulletin No. 11 a Division Superintendent contributed some sound advice on this most important subject. Its great importance is our reason for again calling attention to it.—*Contributed from Claim Department.*

Practical Electricity Class of 1922-1923
Boston Elevated Railway
in Cooperation with
Mass. Dept. of Education
Div. of University Extention

OUR ELECTRICAL COURSE

That the course in practical electricity would be a success I had no doubt last Fall. To know that it was a success one need only to have attended the dinner on April 30th when the 140 men received their certificates and listened to the Chairman of the Board, the President of Massachusetts Institute of Technology, the Director of the Division of University Extension and the Instructor.

Mr. Jackson said "the completion of the course proved the existence of an ambition that must make for the betterment of the service in which you and I, all of us, are at work as servants of our fellow citizens. It is the beginning of an era in which much is to be expected, most of all a large interest in our common tasks and a clearer human touch along the line."

Recently H. G. Wells wrote the following lines:

"Not votes but knowledge emancipates men, and our legal democracy, our final equality at the ballot box must remain essentially an aspiration until adult learning, steady learning, throughout life becomes the common habit."

Schooling and learning can never be "over" in the new world that dawns upon us. The belief that schooling or professional training can come to an end while life lasts, that anyone can have learned all that need be learned, is part of that slave inheritance from which our world is seeking to escape. Learning is a continuous process and there are no bounds to it but the abilities and life of the individual.

In the great republic of the days to come the idea of continuous learning will become the common idea and every ordinary man and woman will seek to share to the utmost possible in the welfare and purpose and contentment of mankind.

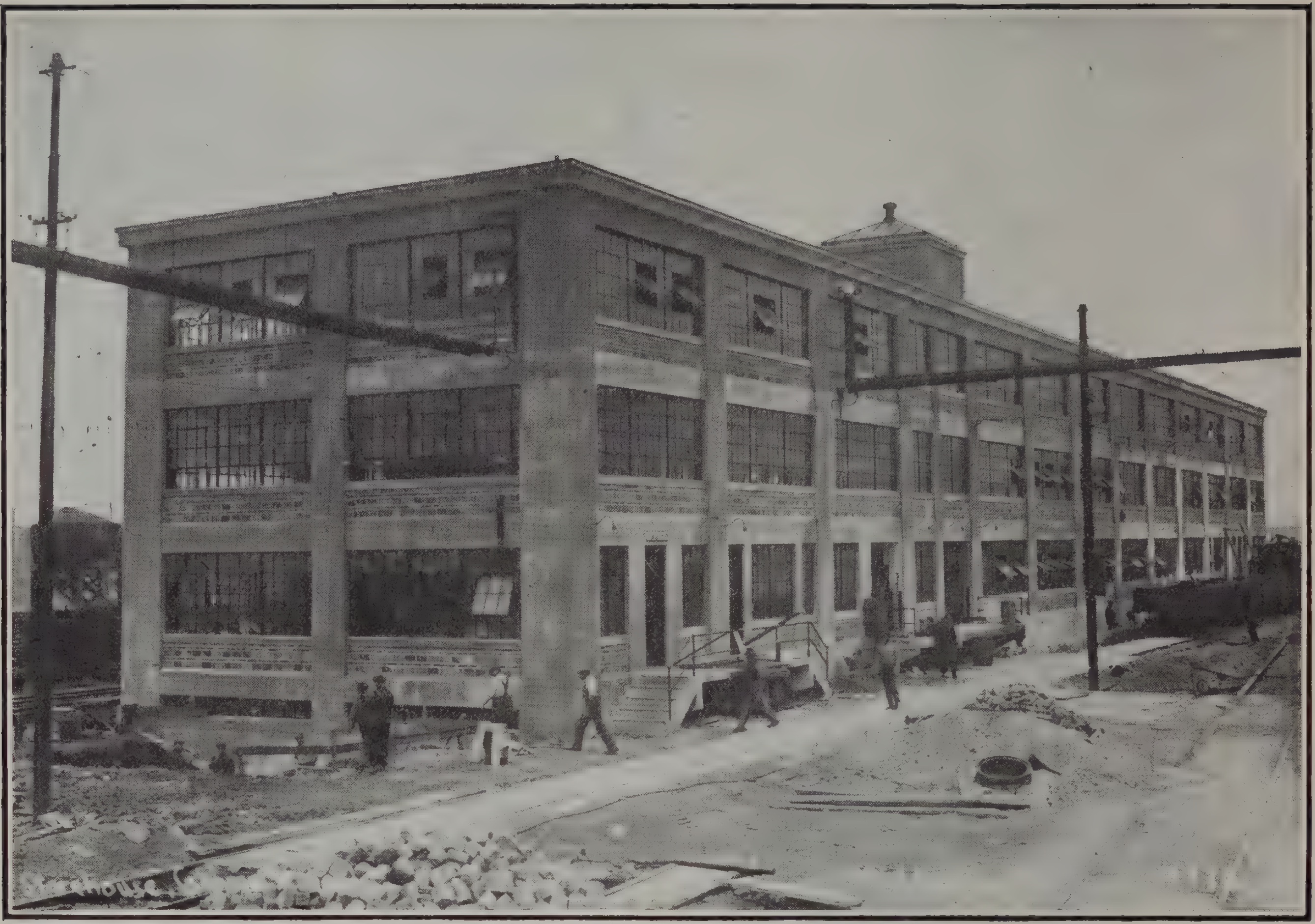
The street railway industry naturally is keenly alive to the problem, and much is being accomplished in other states. We have made our start and must keep in the front rank.

It is certain that the class will take an added interest and effort during the coming year.

THE DIVISION OF EMPLOYES

Last week there were 9,389 employes upon the rolls, divided as follows:

Car and Train Service	3,974
Rolling Stock and Shops	1,770
Way and Structure	1,726
Transportation	965
Power	666
General Offices	288
	9,389



THE NEW GEORGE STREET STOREHOUSE

The old wooden storehouse, formerly at George Street, was completely destroyed by fire on December 10, 1922. This storehouse was over twenty years old, and we had already commenced the construction of a new concrete, fireproof addition, which at the time of the fire was about 70 per cent. completed.

As soon as the ruins of the old storehouse were sufficiently cool, the Maintenance Department began clearing away the debris and laying the foundation for an addition of practically the same size to the building under construction.

The fire occurred on December 10, 1922, and the entire building was completed ready for occupancy on May 1, 1923.

This building is 260 feet long, 40 feet wide and three stories high. It is heated by steam from the Charlestown Power Station adjoining, and a complete sprinkler system has been installed.

The stock bins, lockers, etc., are of fireproof metal construction throughout, and there is an up-to-date, well ventilated and lighted lobby on the ground floor for the use of all the workmen at George Street Yard.

The General Storeroom at George Street is not only the storeroom for the Maintenance Department, but in addition handles the majority of all in-coming freight to this company.

PLANT IMPROVEMENTS

There have been expended by the Trustees between July 1, 1918, and December 31, 1922, approximately seventeen million dollars upon road and equipment, either for entirely new property or for the replacement of worn-out property.

The money to provide for such betterments came from the following sources:

$2,000,000—Part of proceeds of Preferred Stock to which the stockholders were compelled to subscribe before the Public Control Act could take effect.

$4,787,000—Part of the proceeds from the sale of the Cambridge Subway, which has already been appropriated for additions and improvements.

$9,018,000—Available from the depreciation charge taken out of the Cost of Service July 1, 1918, to December 31, 1922.

$700,000—Approximate amount received from insurance and from the sale of real estate properties.

$1,800,000—Floating debt as of December 31, 1922, shortly to be covered by a bond issue.

$18,305,000.

It is with these funds that the Trustees have during this period been providing facilities necessary for the efficient and economical operation of this railway, as follows:

Cars	$8,404,924.00
Car houses and shops	1,836,282.30
Power houses and transmission of electricity	2,679,264.32
Surface lines	3,041,625.00
Elevated structures and appurtenances	871,839.67
Miscellaneous improvements	312,184.02
Total	$17,146,119.31

FIRE PREVENTION

"Put the fires out before they start."—*Fire Commissioner Glynn.*

Let us co-operate all of the time with the Fire Departments in our District and become active agents in Fire Prevention for the common good.

TRY

Try to do a little more
Than you did the day before.

Try to learn something today,
There is knowledge on your way.

Try not to worry or to fret,
Half your trouble, vain regret.

Try to help someone along,
Make your life a merry song.

Try to see all things more clear,
Happiness is always near.

Try to do the best you can,
You will be a better man.

—*Elevated Motorman.*

Thrift is intelligent spending.—*Theodore Roosevelt.*

APRIL OPERATION

	1923	1922
Excess of revenue over cost of service	$210,154.87	$252,003.53
Total revenue passengers	32,304,007	29,728,286
Per cent. 5c fare passengers	25.50	19.85
Trips operated	526.849	491,666
Miles operated	4,397,877	4,164,046
Average rate of fare	8.725	9.007
Tons of coal consumed	20,984	21,941
D.C. KW output—gross for month	20,485,480	18,398,855

Contract has been awarded for completion of first unit of Everett Shops in October.

George Street Storehouse building construction completed.

Construction of new turbine building at South Boston under way.

New No. 5 cars being delivered to service daily.

East Boston Tunnel station at Maverick Square advancing rapidly.

Edward Dana,
General Manager.

May 28, 1923.

9388.7H46A5

PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

JUNE, 1923

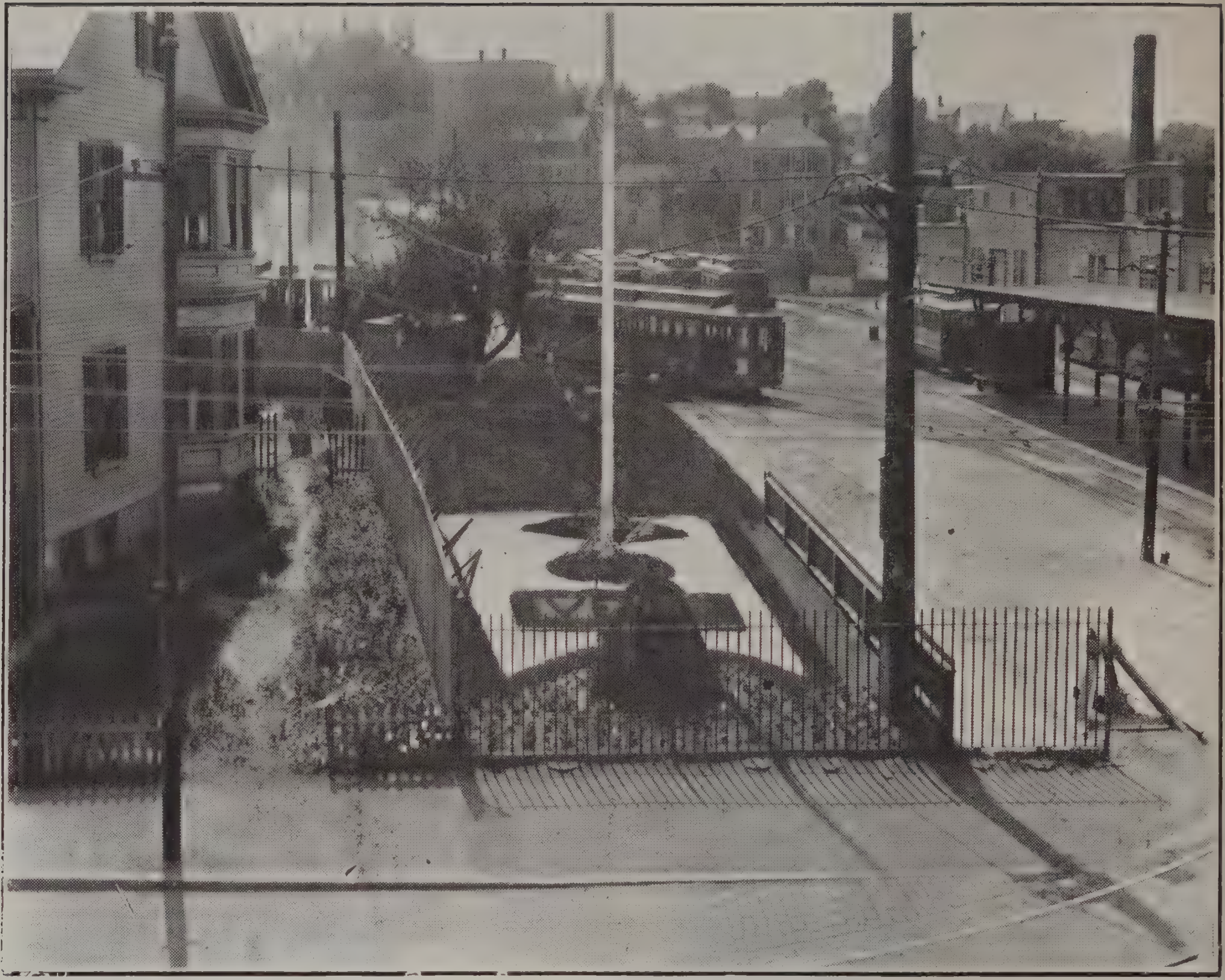
Vol. 2 No. 6

SERVICE
SAFE FOR THE CAR RIDERS SURE
SATISFACTORY

JUNE

"And what is so rare as a day in June?
Then, if ever, come perfect days;
Then Heaven tries the earth if it be in tune,
And over it softly her warm ear lays;
Whether we look, or whether we listen,
We hear life murmur, or see it glisten."

—*James Russell Lowell.*



JAMAICA PLAIN MEMORIAL TABLET.

JAMAICA PLAIN STATION OBSERVES MEMORIAL DAY

With the spirit of Memorial Day in their hearts, a number of men of the Jamaica Plain Station after finishing their work, planted flowers and cut the grass around the tablet which was dedicated with appropriate ceremonies on January 25, 1920, to their fellow-workers at Jamaica Plain Station who made the supreme sacrifice during the World War.

The result as shown above was a very beautiful memorial to those fellow-workers who will live forever in the memory of their associates.

It is the intention of the Board of Trustees to conserve this plot of ground as a memorial regardless of what may be the ultimate disposal of the Jamaica Plain Station.

ARTS CRAFTS AND SCIENCES

Supplies and Materials Utilized in Operating Boston Elevated Railway

In olden days before the division of work had proceeded far street railway service would have been impossible. Even today few realize that to provide street railway service so many kinds of skill are engaged and that the supplies and materials require the services of so many others in many parts of the globe.

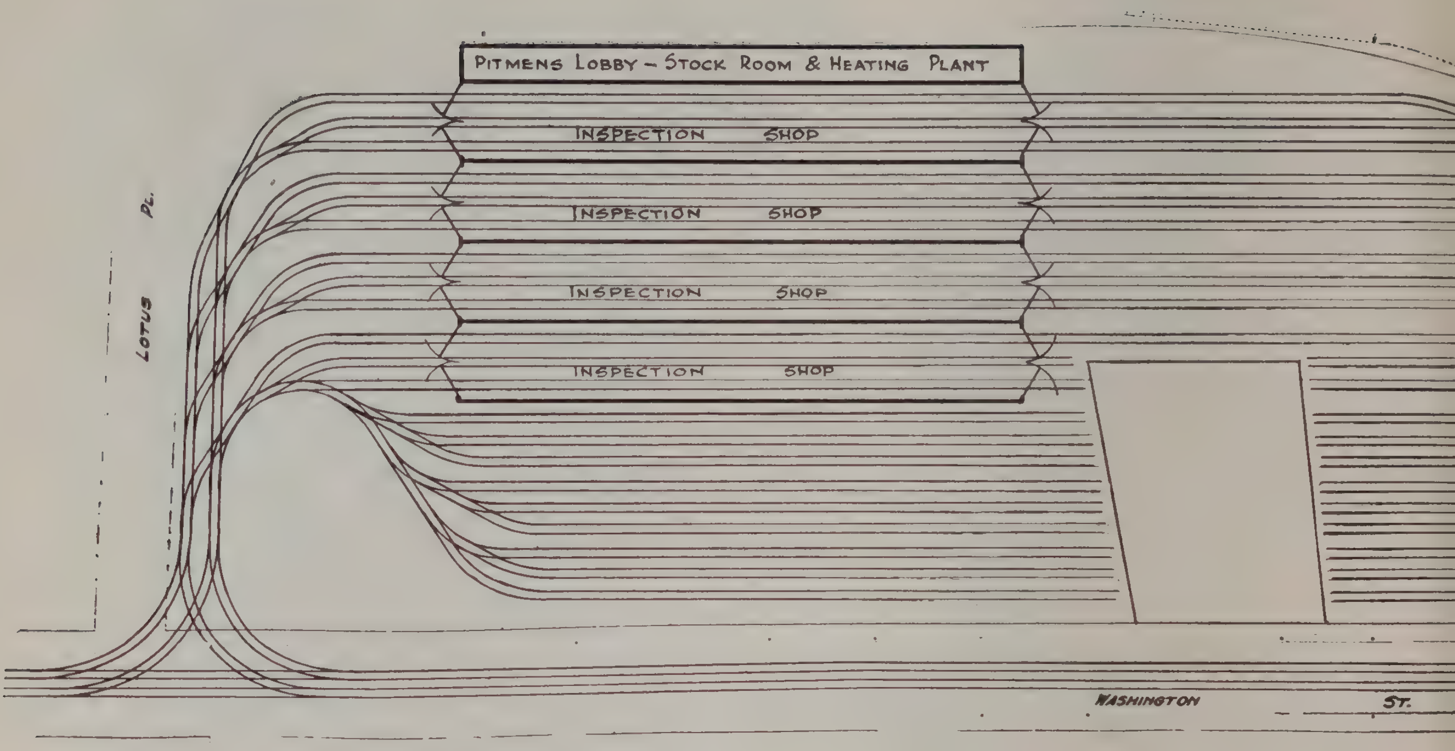
The cut on opposite page, while not complete, indicates in a general way the many kinds of service involved as well as the great variety of supplies and materials involved.

SUPPLIES AND MATERIAL USED

Acid Muriatic
Acid Nitric
Acid Sulphuric
Alcohol
Alum
Aluminum
Ammeters
Ammonia
Anchors
Annunciators
Antimony
Arrestors
Asbestos
Ash Handling Mach.
Automobiles
Auto Supplies
Babbitt
Badges
Barometers
Baskets
Batteries
Bells
Belt Conveyors
Belting
Blankets
Blocks
Blowers
Boilers
Bolts
Bonds
Bone
Borax
Brass
Brooms
Brushes
Building Mat.
Bumping Posts
Buses
Cable
Carbon
Cars
Catchers
Celluloid
Cement
Chains
Chamois
Clay
Clocks Coast'g
Clocks Time
Coal
Condensers
Conduit Fibre
Conveyors
Copper
Cotton
Cork
Couplers
Cranes
Creosote
Curtains
Cyanide
Drain Material
Electrical App's
Electrical Sup
Emery
Enamel
Escalator Mat.
Fare Boxes
Fibre
First Aid Equip.
Flags
Flax
Formaldehyde
Fuel
Fuses
Gas
Gas-Actylene
Gasolene
Glass
Gloves
Glue
Glycerine
Gold Leaf
Graphite
Gravel
Grease
Grinding Mat'ls
Hair Bristles
Hair Camel
Hair-Curled
Hair-Ox
Hardware
Harness
Heating Sup's
Hemp
Horses
Ice
Incandescent Bulb
Iron
Jack
Japan
Kerosene
Lacquer
Ladders
Lampblack
Lamps
Lanterns
Lead
Leather
Lime
Lockers
Lubricants
Lumber
Lye
Magnesia
Marble
Masons Supp'es
Mercury
Metal Polish
Mica
Naptha
Nickel
Office Equip't
Office Sup'lies
Oils
Overalls
Oxygen
Paint
Paper
Parafine
Paving Mat'ls
Phosphorus
Pipe
Pipe Fittings
Platinum
Plumbers Sup's
Porcelain
Potash
Pumice
Punches
Pyrene
Rails
Rail Fasteners
Rail Tools
Rattan
Registers
Rosin
Rubber
Rubber Boots
Sal-Ammoniac
Sal-Soda
Salt
Saltpetre
Sand
Sawdust
Shellac
Signals
Signal Mat
Silica
Silver
Slate
Snow & Ice Tools
Snow Plows
Snow Sleds
Snow Sweepers
Soap
Soap Powder
Soap Stone
Soda
Solder
Special Work
Special Wk. Mat.
Sponges
Stable Sup'es
Stationery
Steel
Stone
Sulphur
Switch Boards
Switch Sticks
Tar
Telephones
Telephone Mat
Tickets
Ties
Timber
Tin
Tools
Tractors
Transfers
Trucks
Turpentine
Varnish
Vehicles
Vitriol
Water
Water Coolers
Wax
White Lead
Wire
Wood
Wool
Zinc

ARTS
CRAFTS AND SCIENCES

Accountant
Architects
Armature Winders
Asbestos Workers
Auditor
Blacksmiths
Blue Printer
Boiler Inspector
Boiler Maker
Bookkeeper
Boring Mill Oper's
Brass Workers
Bricklayers
Bridgemen
Building Insp's
Bus Drivers
Cableman
Car Cleaners
Carpenters
Change Makers
Chauffeurs
Chemists
Civil Eng'rs
Clerks
Coal Hoisters
Collectors
Compressor Men
Conductors
Constructors
Controller Wk's
Crane Oper's
Creosote Men
Crossing Tenders
Dispatcher
Draftsmen
Drawbridge Men
Doctors
Electrical Eng's
Electricians
Elevator Oper's
Engineers
Erector Steel
Escalator Maint.
Equipment Oper's
Firemen
Foundrymen
Gatemen
Glazier
Guards
Grinding Mach. Op's
Grinders Rail
Harness Makers
Helpers
Hoisting Eng'rs
Horse Shoers
Hostlers
Indicator Oper's
Inspectors Mech.
Inspectors Trans.
Janitors
Laborers
Lawyers
Librarian
Light Men
Locksmith
Locomotive Cranemen
Lumber Tallyman
Machinists
Maintainers
Masons
Masons Tenders
Mechanical Eng'rs
Motion Picture Op
Motor Bus Mech's
Motormen
Moulders
Nurses
Operators One Man Car
Painters
Pattern Makers
Pavers
Photographers
Pipe Coverers
Pipers
Plumbers
Pneumatic Tool Op
Porters
Pump Men
Purchas'g Agent
Rail Car Men
Repairmen Arc
Repairmen Auto
Repairmen Car Ho.
Repairmen Cen. Pl.
Repairmen Station
Repairmen Switch
Rigger Bridge
Rodmen
Roofers
Sand Plant Oper's
Schedule Makers
Service Car Men
Sewing Mach. Op's
Sheet Metal Wk's
Shifters
Special Police
Stable Men
Starters
Station Attend'ts
Station Masters
Steam Fitters
Stenographers
Stevedore
Stockmen
Storekeeper
Supervisors Maint.
Supervisors Trans.
Switchmen
Teamsters
Telegraphers
Telephone Oper's
Tie & Timber Agent
Timekeepers
Tinsmith
Tool Wagon Men
Track Cleaners
Track Masters
Trackmen
Trackwalkers
Train Clerks
Transit Men
Treasurer
Truck Drivers
Upholsterers
Warders
Washers
Watchmen
Water Boys
Weighers
Welders
Wiremen
Wirers
Woodworkers
Yardmasters



NEW LOTUS PLACE CARHOUSE

Substantial progress is being made at Lotus Place in providing a modern carhouse and yard layout to care for the cars now using Jamaica Plain and old Lotus Place. The exact location of the lobby has not as yet been determined. There are at present 177 cars at the two stations, and the capacity as shown will care for 290 cars. The provision of modern layout with sufficient freedom of movement and capacity must necessarily reflect directly on the character of service rendered.

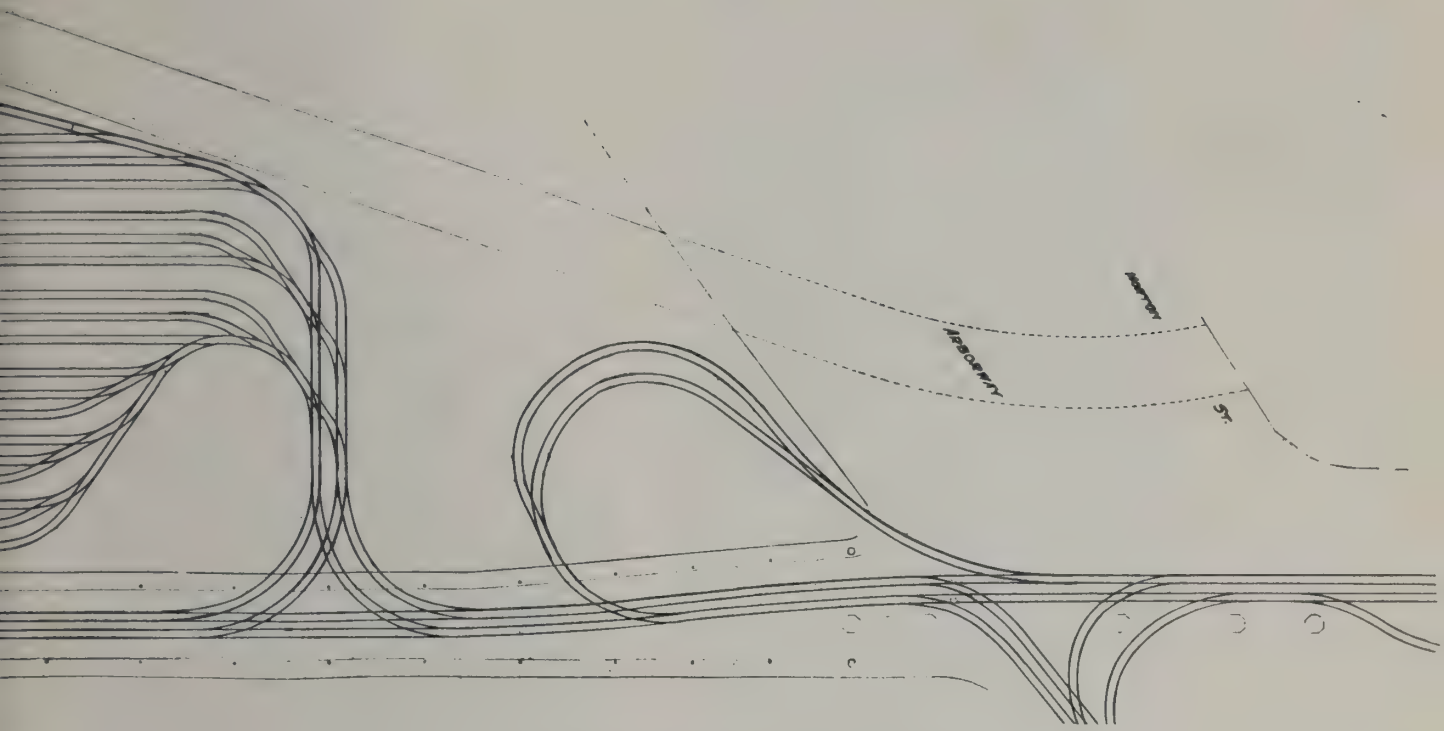
MILLIONS OF BULBS

What makes the "white ways" white forms the subject of a recent survey, which discloses the fact that 250,000 electric signs blaze nightly in the United States, and 15,000,000 electric lamps are needed to illuminate them.

The largest electric sign in the country is studded with 20,000 lamps, the smallest uses but one miniature bulb, and the average number of electric lights to the sign is 60.

Theatres and motion picture houses lead in the number of electrical displays, with more than 2,500,000 lamps. Second on the list is the automobile business, including garages, salesrooms, gas and oil stations, etc., with 1,500,000 lamps. Restaurants, clothing stores, hotels, banks and drug stores follow in the order given.

The average cost of these 250,000 signs is less than one dollar a lamp a year, and their use throughout the country is increasing at a rate approximately 15 per cent. a year, says a recent trade bulletin.



AN ACT OF BRAVERY

Conductor Logan, No. 1235, was about to leave the carhouse when a boy told him a boat had capsized and people were drowning.

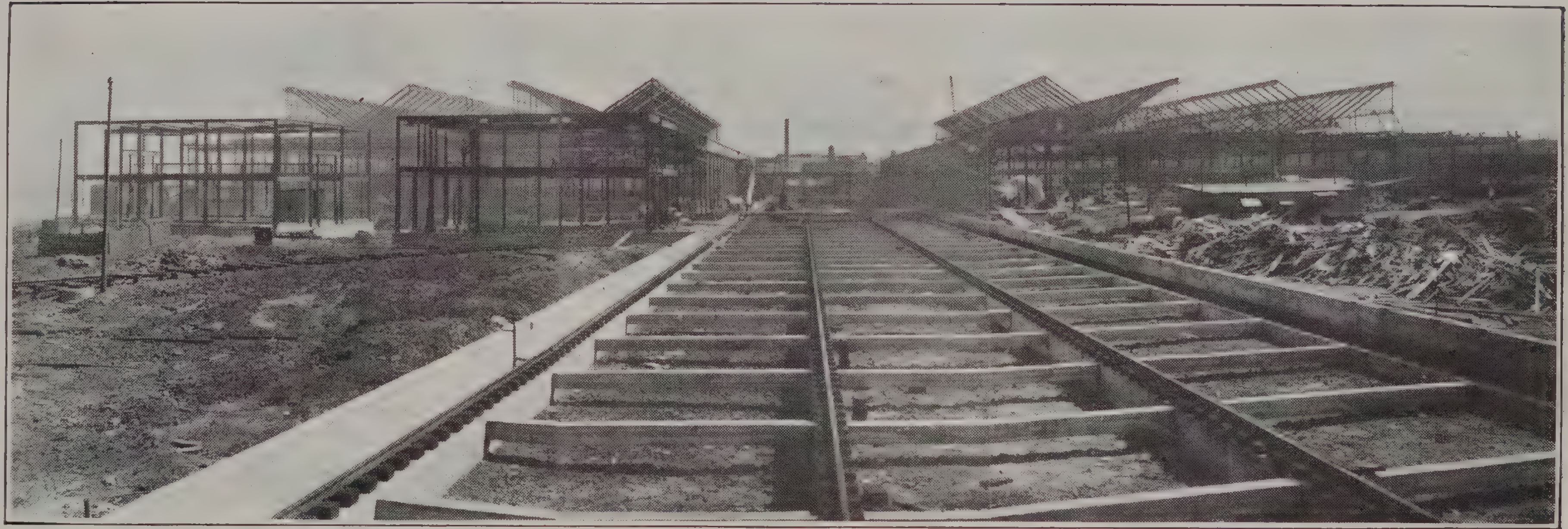
He ran to the shore, observed the boat and children in the water, stripped off his clothes and swam about 150 yards and saved a 15-year old girl as she was going down. When she was placed holding onto the boat he went after her brother, who struggled so hard that it was impossible to save him. Exhausted, he himself was picked up by a motor boat.

OUR WOMEN EMPLOYES

The approximate number of employes at present is 9,500, of which 413 or 4 per cent. are women. They are engaged as armature workers (9), clerks (121), collectors (225), cleaners (4), nurses (3), station receivers (4), stenographers (40) and telephone operators (7).

The average length of service is 7¼ years and the total combined service of the 413 women is 3,000 years. This represents the continuous service of one woman from the time of Tut-Ankh-Amen working steadily down to the present day.

The fact that the average length of service is 7¼ years indicates the faithful and efficient service performed and is a source of satisfaction to the Management.



PROGRESS ON THE EVERETT SHOPS

In order that our organization may appreciate the rapid progress being made on the Everett Shops the present conditions are shown in this cut.

The contract, which permits the abandonment of Bartlett street, calls for completion on October 26, 1923.

The total area of land is about 25 acres and the amount expended to date is $1,027,613.43.

The buildings shown in this cut on either side of the transferway are the paint shop, wood-working building, lumber storage building and kiln building.

TEAM WORK

Contributed from Claim Department

The time seems ripe for a brief restatement of the importance of team work. At the outset, let us all realize that the responsibility for the success of this railway is not concentrated in any one person. Three necessary elements, or factors, in the successful operation of this property are: (1) The car riders; (2) The officers responsible for adequate and efficient service for the car riders; (3) All operating and other employees and instrumentalities necessary for establishing and maintaining such service. If these factors are thoroughly analyzed it may be seen that it is the enlargement of the interest of the first factor that offers by far the greatest possibilities of success to the second and third. The thing of first importance, therefore, if we hope to have these different elements function properly is, team work. A little reflection should make us all realize the force of this truth. This means that we must increase and maintain our team work. To be effective, we should work together and always for the greatest success of factor one. Although very many who are employed in the work of this railway never see "THE OTHER FELLOW" who is also engaged in the activities of the property, one feels that there is nevertheless a certain acquaintanceship and a comradeship of a tangible sort. TheMonthly Bulletin issued by the Management emphasizes this, since in its columns we may meet and speak to each other upon the common ground of a kindred craftsmanship and a community of interest. Really, we have so much in common that we should all have the same basic interest. Appreciation of the existence of a mutual interest is the only thing which can furnish sufficiently powerful motives to each of us to endeavor zealously day after day to make our team work victorious. More and more is our range of interest widening, and more and more in our common and every day relations do we see our Esprit de corp vindicating its functions, not among individual employees alone, but also among the great rank and file of our car riders and the public. As railway men, we are engaged in the same occupation, working toward the same ultimate end, namely, to give the car rider the most economical and best service we can. True, some of us differ as to individual duties, each of us having been trained and developed with a knowledge best adapted to the primary object of our particular activities, yet all having in view the same common mission, not alone for individual profit nor for our accomplishment of the day's work, but to the end that the margin surrounding the day's work will show a contribution toward progress and the advancement of the comfort and interests of the car rider. Imbued with the same ideals, swayed by the same influences, held to our work by the consciousness of a duty to strive for more than the mere fruits of the day's work, we may be sure that the record made in the operation of this property will spell success. It has been said that for every impulse there is either action or reaction. Every time we feel an impulse to do something, there is a negative tendency not to do it. Hence, it may be seen how very important it is to have only right impulses. These we can have, if we always hew right up to the line of our full duty. If we do all this, the results will speak in terms of team work.

A RAPID TRANSIT LINE EMPLOYE CONTRIBUTES THE FOLLOWING

"Every Employe a Booster for the Boston Elevated Railway"

Are you with us?
Will you talk it up?
Will you play fair?
Will you smile?
Will you silence destructive criticism?
Will you encourage constructive criticism?
Will you think of the other fellow?
Will you lend a hand?
Will you mind your own business and attend to it well?
Will you co-operate with others?
Will you invite other employes to join in our slogan?

Remember :—

"Every Employe a Booster for the Boston Elevated Railway"

"Speak gently! 'tis a little thing
Dropped in the heart's deep well,
The good, the joy that it may bring
Eternity shall tell."

—*John Langford.*

MAY OPERATION

	1923	1922
Excess of revenue over cost of service....	$ 232,897.86	$ 257,800.28
Total revenue passengers..............	33,555,164	31,347,132
Per cent. 5c fare passengers............	25.83	20.78
Trips operated	558,535	516,212
Miles operated	4,658,805	4,373,187
Average rate of fare..................	8.708c	8.961c
Tons of coal consumed................	19,149	20,012
D.C. KW output—gross for month......	18,709,670	17,568,960

Edward Dana,
General Manager.

June 25, 1923.

9388.7446A

PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

JULY, 1923

Vol. 2 No. 7

SERVICE
SAFE FOR THE CAR RIDERS SURE
SATISFACTORY

FIVE YEARS OF PUBLIC CONTROL

Five years have now elapsed since the operation of this railway passed into the control of Trustees appointed by the Governor of the Commonwealth. It is well to review the situation briefly at this time.

During the first year increasing costs of operation exceeded the revenue obtainable under a 5, 7 and 8 cent fare. An actual deficit occurred of $5,415,500.13, divided as follows:

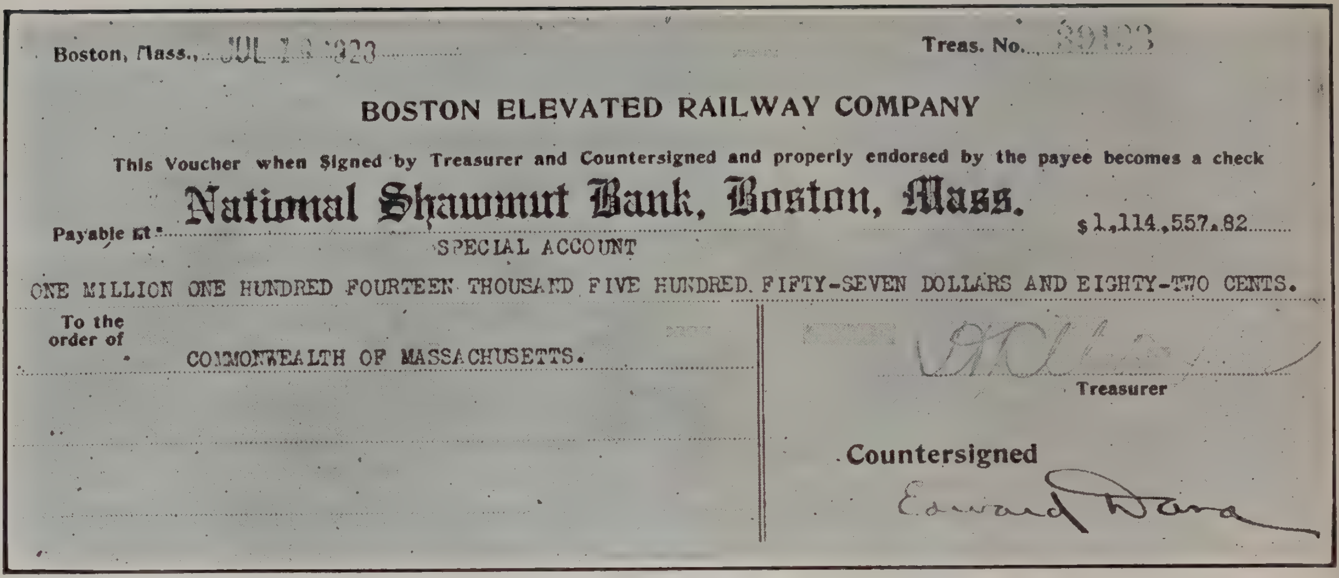
$1,000,000.00 in the reserve fund exhausted.
$3,980,151.67 assessed against cities and towns.
$435,348.46 back pay occurring in May and June, 1919, under an arbitration award.

Today the $1,000,000.00 reserve fund has been restored, the $435,348.46 back pay has been absorbed, and two payments, one of $517,196.45 and the other of $1,114,557.82 have been made to the cities and towns. Therefore 57% of the 1918 deficit has been overcome, leaving $2,348,397.40 still due the municipalities, to which problem we must now direct our best co-operative efforts.

Our efforts cannot in the public interest be directed solely along one line. We have, however, made creditable reduction in the deficit, reduced the fare (26% of the riders or 100 million a year now ride for 5 cents), and we have improved the service with new cars, new track and increased mileage.

We are proud of our calling and we have proven that co-operation gets results.

Forward to the problem lying ahead!



Boston, Mass., JUL [illegible] 1923

Treas. No. 39123

BOSTON ELEVATED RAILWAY COMPANY

This Voucher when Signed by Treasurer and Countersigned and properly endorsed by the payee becomes a check

Payable at National Shawmut Bank, Boston, Mass.

$1,114,557.82

SPECIAL ACCOUNT

ONE MILLION ONE HUNDRED FOURTEEN THOUSAND FIVE HUNDRED FIFTY-SEVEN DOLLARS AND EIGHTY-TWO CENTS.

To the order of COMMONWEALTH OF MASSACHUSETTS.

Treasurer

Countersigned Edward Dana

PHOTO OF CHECK PAID TO THE STATE TO REDUCE DEFICIT.

IN RETROSPECT BY A LOYAL THIRTY YEAR EMPLOYE

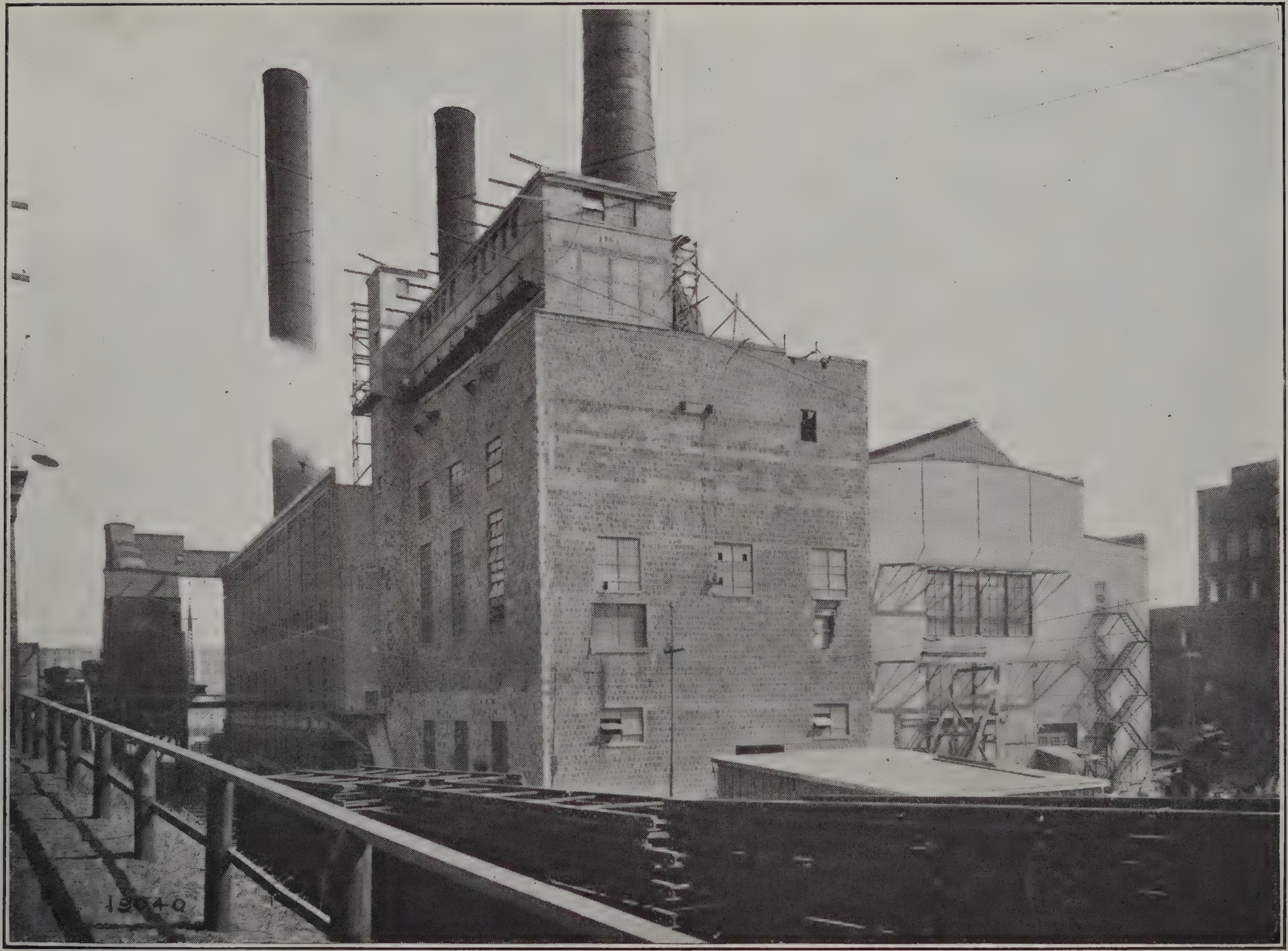
April 19th, 1869, when I first came to Boston on the B. & M. R. R., I wanted to find a friend who worked for the Grover & Baker Sewing Machine Company. I inquired the way and was told to "go right straight along and take the horse car." I did so, and after meeting my friend, we took nearly an hour's ride at 12 cents fare to his house at Forest Hills. Later on I saw what a number of lines of horse cars there were running from Scollay Square and the old Tremont House to South Boston, Mt. Pleasant, Fields Corner and several others, each with a separate fare. If I remember rightly, it was 15 cents to Everett and a trip from Everett to Forest Hills—sometimes stopping every few feet—meant almost getting up early and going to bed late the same day.

Those cars were too slow for Boston, and January 1st, 1889, the first electric cars were run, and as they branched out in different directions, people rode in them for the novelty, and as they passed vacant lots and fields, the desire for homes out of town grew strong. Houses were built here and there and streets were cut through. People who worked in the city could get home much quicker and the road and suburbs grew. Tens of thousands of dollars' worth of taxable property are along the surface lines, and those lines all feed the Elevated. The small roads of 50 years ago are now merged into one great whole and the long, long trips of former days, with walking horse time in hot summer weather and four-horse time in snow storms with the straw freezing to one's feet have now given way to the warm cars of surface and Elevated and protects the motorman from facing the bitter winds of winter, the old cold stables giving place to the more comfortable workshops, and putting cars and machinery under proper inspection for safety of passengers and employes. Still, for the mutual benefit of road and people, it is still growing and other sections may equal the time from Everett Terminal to Forest Hills—30 minutes. The cars in other cities do not have to contend with narrow crooked streets like Boston. The Hub turns as often as the rim of the wheel, but doesn't make so much noise about it.

COMPARATIVE DIVISION OF RECEIPTS AND EXPENDITURES FOR THE YEARS ENDING JUNE 30th,

	1923	1922	1921	1920	1919	1918	1917
Total Receipts	$33,612,335.20	$32,781,493.10	$34,224,149.83	$32,689,200.87	$25,223,495.72	$19,480,022.08	$19,788,953.25
Operating Expenses							
Wages	$15,024,348.04	$14,920,406.05	$16,753,667.74	$16,381,206.58	$13,554,684.15	$9,147,757.25	$9,033,868.40
Material, supplies and other items	3,149,687.89	3,056,520.80	2,899,983.94	3,321,671.70	4,096,537.98	2,680,423.77	1,951,176.39
Injuries and Damages	700,740.79	476,844.02	627,629.02	627,626.48	805,353.09	817,227.18	819,705.54
Depreciation	2,004,000.00	2,004,000.00	2,004,000.00	2,004,000.00	2,004,000.00	352,670.00	330,000.00
Fuel	2,027,712.50	1,656,012.89	2,399,277.71	1,996,717.21	1,901,596.75	1,381,957.20	947,412.50
Total Operating Expenses	$22,906,489.22	$22,113,783.76	$24,684,558.41	$24,331,221.97	$22,362,171.97	$14,380,035.40	$13,082,162.83
Taxes	$1,722,707.95	$1,610,096.47	$1,306,736.39	$1,075,496.70	$941,611.50	$905,032.96	$984,070.55
Rent of Leased Roads	49,194.52	2,549,625.48	2,673,166.56	2,607,565.96	2,587,129.57	2,547,420.60	2,428,512.28
Subway and Tunnel Rents	2,025,263.33	1,974,141.07	1,947,963.20	1,591,323.98	1,491,999.54	991,551.30	995,093.45
Interest on B. E. Bonds and Notes	2,277,051.15	1,483,786.91	1,483,625.54	1,593,257.58	1,423,142.14	1,238,373.55	1,138,655.88
Miscellaneous Items	65,986.23	58,475.99	54,479.21	69,284.73	37,372.67	16,050.44	9,525.11
Dividends	3,136,853.50	1,606,371.98	1,523,367.00	1,403,970.00	1,360,220.00	......	1,193,970.00
Total Cost of Service	$32,183,545.90	$31,396,281.66	$33,673,896.31	$32,672,120.92	$30,203,647.39	$20,078,464.25	$19,831,990.10
Gain	$1,428,789.30	$1,385,211.44	$550,253.52	$17,079.95	......	......	......
Loss	......	......	......	......	$4,980,151.67	$598,442.17	$43,036.85
Back Pay applying to May and June, 1919, but paid in October, 1919					$435,348.46		
					$5,415,500.13		

	1916	1915	1914	1913	1912	1911	1910
Total Receipts	$18,781,327.74	$17,886,549.64	$17,785,978.25	$16,968,328.33	$16,522,542.00	$15,980,707.94	$15,245,865.48
Operating Expenses							
Wages	$8,351,117.54	$7,709,373.86	$7,247,064.66	$6,552,207.62	$6,132,256.13	$6,098,710.60	$5,910,757.73
Material, supplies and other items	1,921,083.01	1,922,622.52	2,441,049.17	3,014,654.90	3,242,423.53	2,488,667.44	2,376,033.78
Injuries and Damages	762,351.77	722,177.00	751,331.77	750,041.39	797,436.03	694,558.61	776,588.37
Depreciation	220,000.00	62,989.65	......	......	......	......	200,000.00
Fuel	825,443.64	870,820.30	858,415.86	818,677.27	804,518.64	837,127.67	822,497.54
Total Operating Expenses	$12,079,995.96	$11,287,983.33	$11,297,861.46	$11,135,581.18	$10,976,634.33	$10,119,064.32	$10,085,877.42
Taxes	$1,043,041.89	$1,069,189.27	$1,040,946.80	$1,128,021.51	$1,221,756.84	$1,244,832.77	$1,213,089.37
Rent of Leased Roads	2,395,804.21	2,325,288.75	2,264,201.00	2,221,287.16	2,178,523.06	2,143,262.64	2,028,165.15
Subway and Tunnel Rents	915,192.35	825,496.17	677,900.44	687,308.54	603,226.03	567,087.45	559,469.14
Interest on B. E. Bonds and Notes	1,129,677.70	1,049,785.12	1,067,900.00	1,095,506.95	837,033.33	556,000.00	556,000.00
Miscellaneous Items	13,845.90	4,587.89	......	......	......	......	......
Dividends	1,193,970.00	1,313,367.00	1,193,970.00	1,197,000.00	1,197,000.00	1,197,000.00	1,002,003.00
Total Cost of Service	$18,771,528.01	$17,875,697.53	$17,542,779.70	$17,464,705.34	$17,014,173.59	$15,827,247.18	$15,444,604.08
Gain	$9,799.73	$10,852.11	$243,198.55	......	......	$153,460.76	......
Loss	......	......	.....	$496,377.01	$491,631.59	......	$198,738.60



SOUTH BOSTON POWER STATION ENLARGEMENT

DEVELOPMENT OF POWER SYSTEM

The following facts are of interest in connection with the extension to our South Boston Power Station built during the past year to provide additional boiler capacity at this plant.

The extension consists of a steel and brick building, connected to the existing building, a steel stack and two boilers with necessary auxiliary equipment.

To provide for this extension and equipment, an area 105 ft.x74 ft.x9 ft. deep was excavated, approximately 2,600 cubic yards of fill being removed.

To provide foundation, 400 30 ft. concrete piles were driven over which was laid two concrete mats each 87′ 6″ long x 36′ 3″ wide x 6 ft. deep.

Six hundred and ninety-nine tons of steel was required for the building in which 22,500 rivets were driven.

The steel stack is 271 ft. high and 14′ 10″ in diameter. It rises 325′ 9″ above the boiler room floor as compared with the old stacks which are 211 ft. in height.

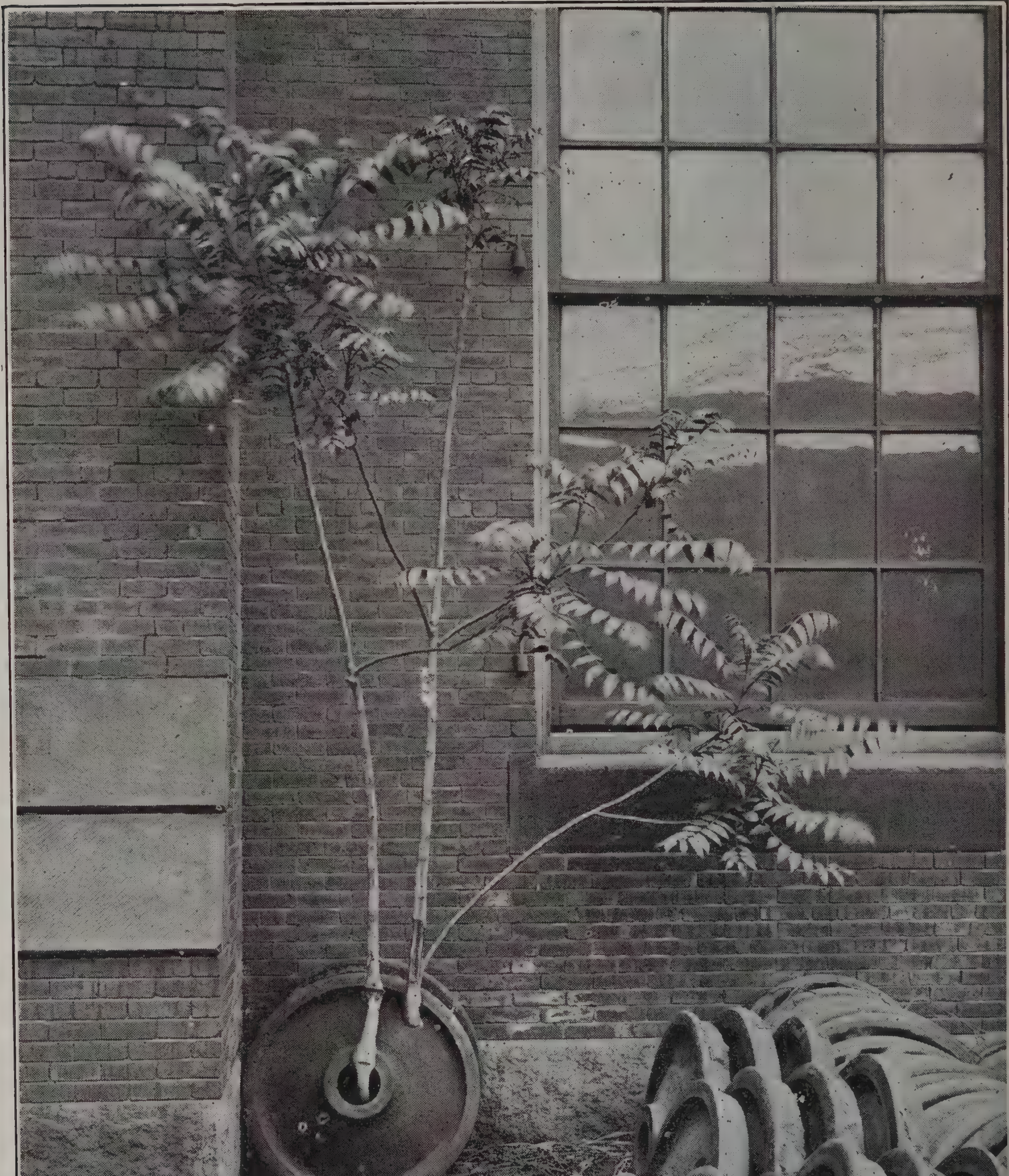
The two boilers are of the cross-drum type. Each boiler is of 1825 H. P. with a drum 60″ in diameter x 28′ 5″ long. Each boiler has 780 4″ x 20 ft. tubes. The size of these boilers is best illustrated by comparison with previous installations. Others boilers at this plant are of 600 H. P. with drums 42″ in diameter and 20′ 4″ long and have 294 4″ x 18 ft. tubes.

The new boilers are equipped with 13-retort stokers with a grate 22′ 10″ wide and 13′ 3⅜″ deep. This is to be compared with previous stoker installations of 7 retorts and grate widths varying from 11′ 3⅜″ to 12′ 6¾″ and depths from 6′ 8″ to 8′ 5″.

A new coal bunker of 1,225 tons capacity has been provided with traveling weighing scale and necessary belt conveyor.

Work is now in progress on the generator building to provide for the new 35,000 K. W. turbine to be delivered this year.

The total expenditure on these additions since 1922 totals $391,679.19.



SUMAC TREE AT ALBANY STREET

Sumac Tree Gives Example of Winning Struggle Which Appeared Hopeless

A row of unused car wheels was placed against the Albany Street Shop Building.

Beneath them was a seed of a sumac tree in the ground.

When spring arrived the sun's warmth caused the seed to grow.

A solid wall of steel stood between this seedling and existence except for the slight rays of sunlight which filtered through the axle holes.

The seed started the uphill struggle and followed the concave surface on the outside of the wheel, then through the axle hole and then through the space between the two wheels.

The tree was misshapen as it followed this course but ultimately it reached the sunlight and fresh air and grew as shown in the cut which has taken three years.

The last two wheels have not been disturbed and this tree still grows.

The House by the Side of the Road

By Sam Walter Foss

"There are hermit souls that live withdrawn
In the peace of their self-content;
There are souls like stars that dwell apart,
In a fellowless firmament;
There are pioneer souls that blaze their paths
Where highways never ran;—
But let me live by the side of the road
And be a friend to man.

Let me live in a house by the side of the road
Where the race of men go by—
The men who are good and the men who are bad,
As good and as bad as I.
I would not sit in the scorner's seat,
Or hurl the cynic's ban;—
Let me live in a house by the side of the road
And be a friend to man.

I see from my house by the side of the road,
By the side of the highway of life,
The men who press with the ardor of hope,
The men who are faint with the strife.
But I turn not away from their smiles nor their tears—
Both parts of an infinite plan;—
Let me live in my house by the side of the road
And be a friend to man.

I know there are brook-gladdened meadows ahead
And mountains of wearisome height;
That the road passes on through the long afternoon
And stretches away to the night.
But still I rejoice when the travelers rejoice,
And weep with the strangers that moan,
Nor live in my house by the side of the road
Like a man who dwells alone.

Let me live in my house by the side of the road
Where the race of men go by—
They are good, they are bad, they are weak, they are strong,
Wise, foolish—so am I.
Then why should I sit on the scorner's seat
Or hurl the cynic's ban?—
Let me live in my house by the side of the road
And be a friend to man."

With the Crowd in the Road

By Walter J. Gresham

"'Tis only a half truth the poet has sung
Of the house by the side of the way:
Our Master had neither a house nor a home,
But he walked with the crowd day by day.
And I think when I read of the Poet's desire,
That a house by the road would be good;
But service is found in its tenderest form
When we walk with the crowd in the road.

So I say, let us walk with the men in the road,
Let us seek out the burdens that crush,
Let us speak a kind word of good cheer to the weak
Who are falling behind in the rush.
There are wounds to be healed, there are breaks we must mend,
There's a cup of cold water to give;
And the man in the road by the side of his friend
Is the man who has learned how to live.

Then tell us no more of the house by the road,
There is only one place we can live;
It's there with the men who are toiling along,
Who are needing the cheer we can give.
It is pleasant to live in the house by the way,
And befriend as the poet has said:
But the Master is bidding us. "Bear ye their load,
For your rest waiteth yonder ahead."

I could not remain in the house by the road,
And watch as the toilers go on,
Their faces beclouded with pain and with sin,
So burdened, their strength nearly gone.
I'll go to their side, I'll speak in good cheer,
I'll help them to carry their load;
And I'll smile at the man in the house by the way,
As I walk with the crowd in the road.

Out there in the road that goes by the house
Where the poet is singing his song,
I'll walk and I'll work midst the heat of the day,
And I'll help falling brothers along.
Too busy to live in the house by the way,
Too happy for such an abode,
And my heart sings its praise to the Master of all,
Who is helping us serve in the road,"

"When one gets to love work,
His life is a happy one."
—*Ruskin.*

ONE KILOWATT HOUR

The French government, after exhaustive research and experiment, has drawn up a list of tasks that can be done by one kilowatt hour of electrical energy. This unit of energy will:

Drive a sewing machine for 20 hours;
Save 1.05 gallons of kerosene;
Clean 15 steel table knives for a year;
Clip 5 horses or 25 sheep;
Heat water for shaving for 1 month;
Light 3 cigars a day for 5 years;
Heat a flatiron for 3 hours;
Boil 2.37 gallons of water;
Fry 15 chops in 15 minutes;
Heat a curling-iron for 20 mornings;
Incubate 250 eggs;
Milk 20 cows;
Separate 350 gallons of milk;
Churn 440 pounds of butter.

THE REWARD OF COURTESY

How sweet and gracious, even in speech,
Is that fine sense which men call Courtesy!
Wholesome as air and genial as the light,
Welcome in every clime as breath of flowers,
It transforms strangers into trusting friends,
And gives its owner passport 'round the globe.
—*Fields.*

JUNE OPERATION

	1923	1922
Excess of revenue over cost of service....	$37,606.43	$87,529.57
Total revenue passengers................	30,992,291	28,659,926
Per cent. 5c fare passengers..............	25.59	20.86
Trips operated	513,829	494,861
Miles operated	4,536,767	4,203,026
Average rate of fare	8.719c	8.956c
Tons of coal consumed	19,905	18,653
D.C. KW output—gross for month.......	17,812,340	16,716,790

EDWARD DANA,
General Manager.

July 30, 1923.

9388.7446 A

PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

AUGUST, 1923

Vol. 2

SERVICE
SAFE FOR THE CAR RIDERS SURE
SATISFACTORY

No. 8

ARBITRATION

The August bulletin has been delayed because of the arbitration proceedings. Now that the facts have been presented and the decision is awaited it is pertinent to reflect upon the satisfaction which must exist in the minds of our organization that calm, deliberate presentation of pertinent facts is the only way in which differences affecting a vital public necessity should be settled. It is also a source of satisfaction that notwithstanding differences affecting so vital a matter the spirit of co-operation has in no way suffered because of arbitration but as commented upon by the press it has been a conspicuous factor throughout the proceeding.

RECEIPTS AND EXPENDITURES PER REVENUE PASSENGER FOR THE YEARS ENDING JUNE 30th

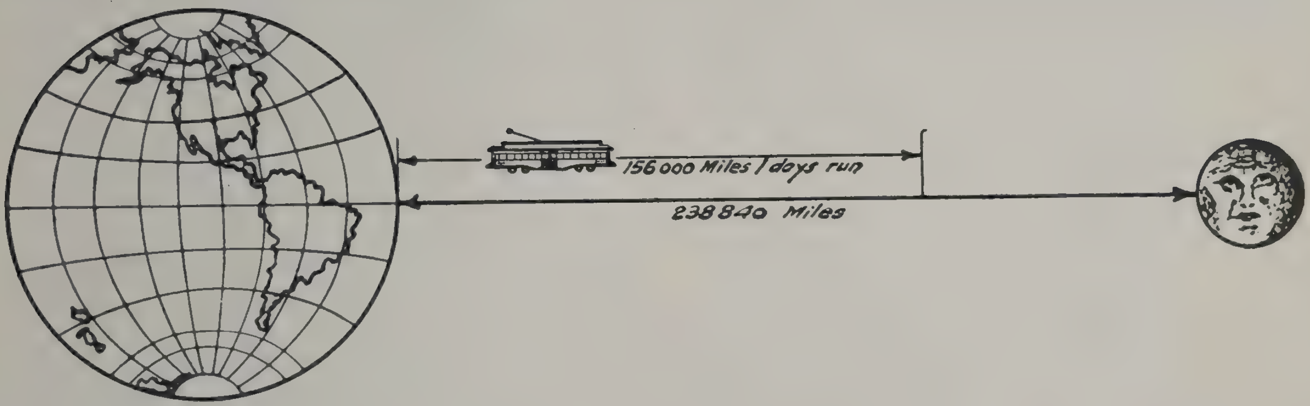
	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Total Receipts	5.219	5.238	5.325	5.199	5.183	5.165	5.167	5.212	5.174	7.612	10.083	10.144	9.487	8.995
Labor	2.024	1.999	1.976	2.008	2.112	2.226	2.297	2.379	2.430	4.091	5.053	4.966	4.318	4.021
Material and Supplies	.813	.816	1.045	.924	.711	.555	.529	.514	.712	1.236	1.025	.860	.885	.842
Injuries and Damages	.266	.228	.257	.229	.219	.209	.210	.216	.218	.243	.194	.186	.138	.188
Depreciation	.068					.018	.061	.087	.093	.605	.618	.594	.580	.536
Fuel	.282	.274	.259	.251	.250	.251	.226	.250	.367	.574	.615	.711	.479	.543
Total Operating Expenses	3.453	3.317	3.537	3.412	3.292	3.259	3.323	3.446	3.820	6.749	7.505	7.317	6.400	6.130
Taxes	.415	.408	.394	.346	.303	.309	.287	.259	.240	.284	.332	.387	.466	.461
Rent of Leased Roads	.694	.702	.702	.681	.660	.671	.659	.640	.677	.781	.804	.792	.738	.013
Subway and Tunnel Rents	.192	.186	.194	.210	.198	.238	.252	.262	.263	.450	.491	.577	.571	.542
Interest on B. E. Bonds and Notes	.190	.183	.270	.336	.311	.304	.311	.300	.329	.430	.491	.440	.429	.610
Miscellaneous Items						.001	.004	.003	.004	.011	.022	.016	.017	.018
Dividends	.343	.392	.386	.366	.348	.380	.328	.314		.411	.433	.452	.465	.839
Excess		.050			.071	.003	.003				.005	.163	.401	.382
Deficit	.068		.158	.152				.012	.159	1.504				
Back Pay										.131				
Total Deficit										1.635				

Bureau of Audit
July 18, 1923.

EXPENDITURES PER REVENUE PASSENGER

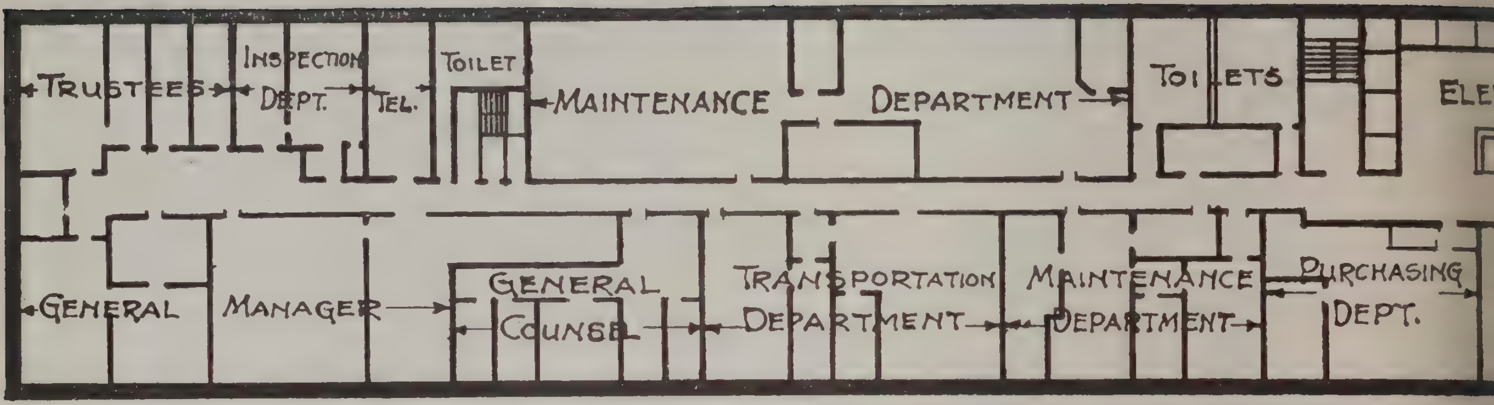
The table upon the opposite page shows the division of receipts and expenditures per revenue passenger for the years ending June 30 from 1910 to 1923. In reality this shows the apportionment of each cent of the total average receipts for each revenue passenger carried and shows in an interesting way the changes which have taken place.

ONE DAY'S RUN



The moon we see sailing in the heavens is said to be 238,840 miles out in space. It is interesting to note that the cars of the Elevated run 156,000 miles per day, or translated in the run of one car over 65 per cent. of the distance to the moon is covered daily. Of course at the average speed of a car it would take approximately two years to cover an equivalent distance.

Sky writing by aeroplane is best done at an elevation of about 10,000 feet. It takes from seven to eight million cubic feet of smoke to form a single letter and the letters vary from one-half to one mile from top to bottom.

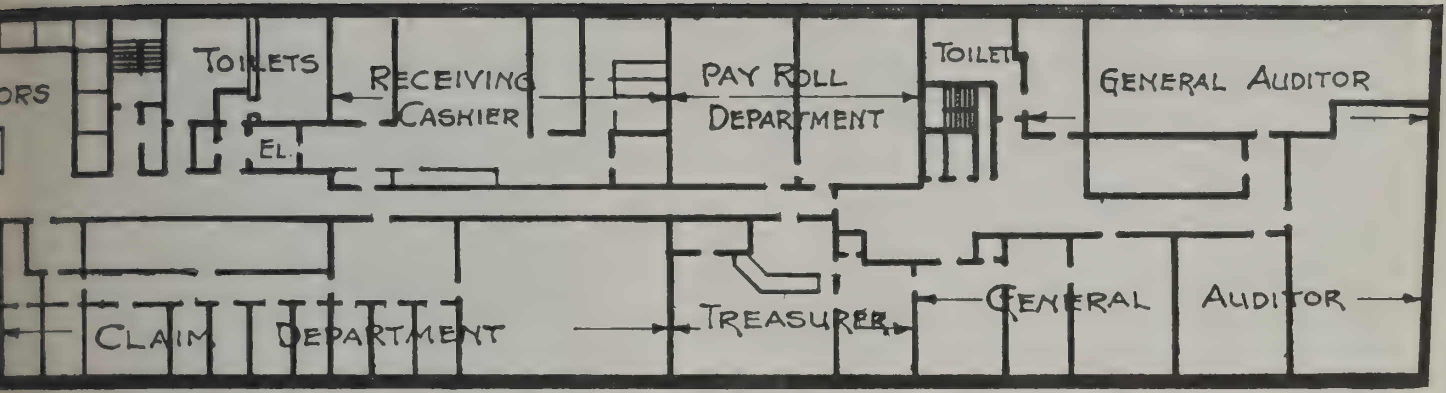


THE NEW GENERAL OFFICES

The arrangement of the offices at St. James avenue in the Park Square Building is shown in the cut. Here for the first time the offices are arranged upon a single floor.

At 101 Milk street they were scattered from the second to the tenth floors, and at 108 Massachusetts avenue they are divided between the fifth, sixth and seventh floors.

In 1919 we were suddenly required to move from Milk street and 108 Massachusetts avenue was the only space quickly available. These quarters were never designed for such offices and many of the employes have been handicapped during the last four years because of this fact. In September, however, with the removal from Massachusetts avenue the arrangement of the offices will be modern in every respect.



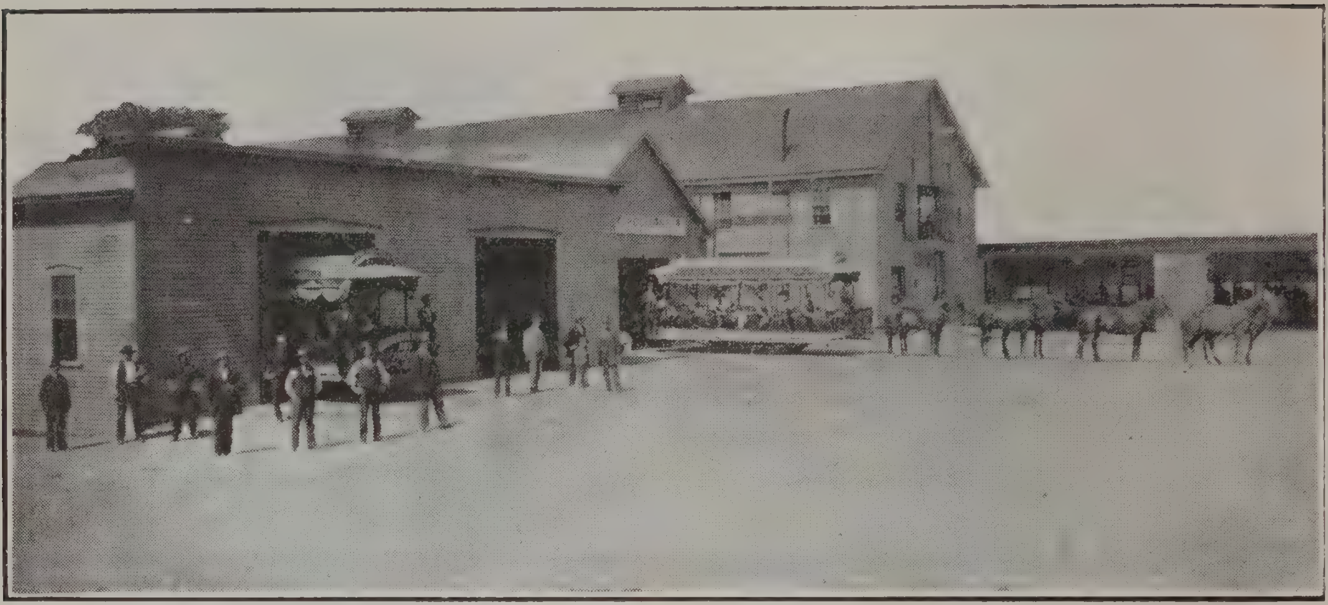
PREVENT ACCIDENTS

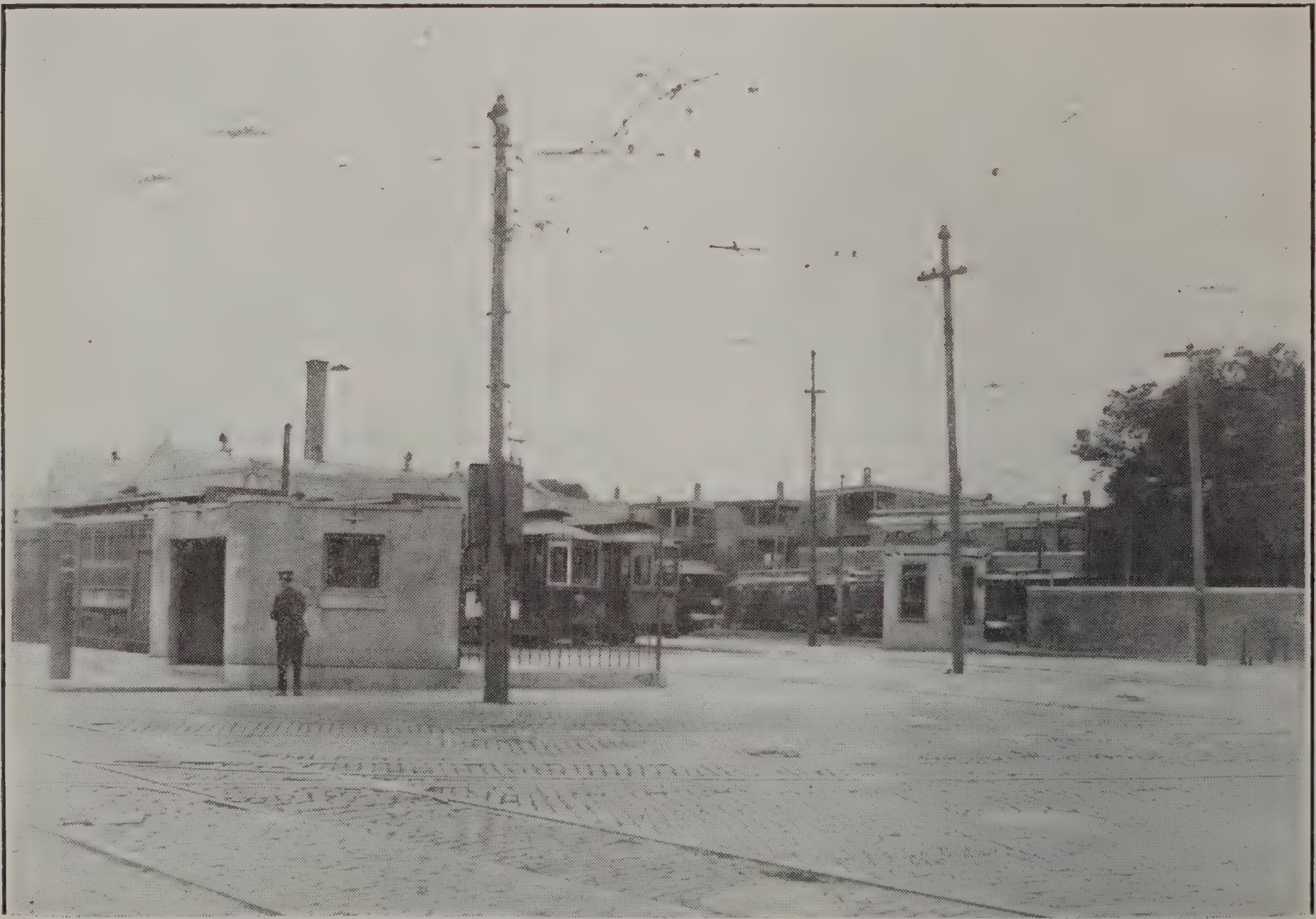
It is the duty of every person to help to reduce the number of accidents whether it be in the street, the office, the shop, or the home. It is YOUR duty as a citizen, a neighbor or a fellow worker. We should ever be on the alert to remove dangerous conditions and thus overcome possible chances for accidents.

With the opening of the schools, the likelihood of accidents to the little children is greater and we should therefore increase our efforts to save them from harm.

Statistics show that the loss of life and cost of damage due to accidents are increasing at a startling rate. It is our duty to reduce them.

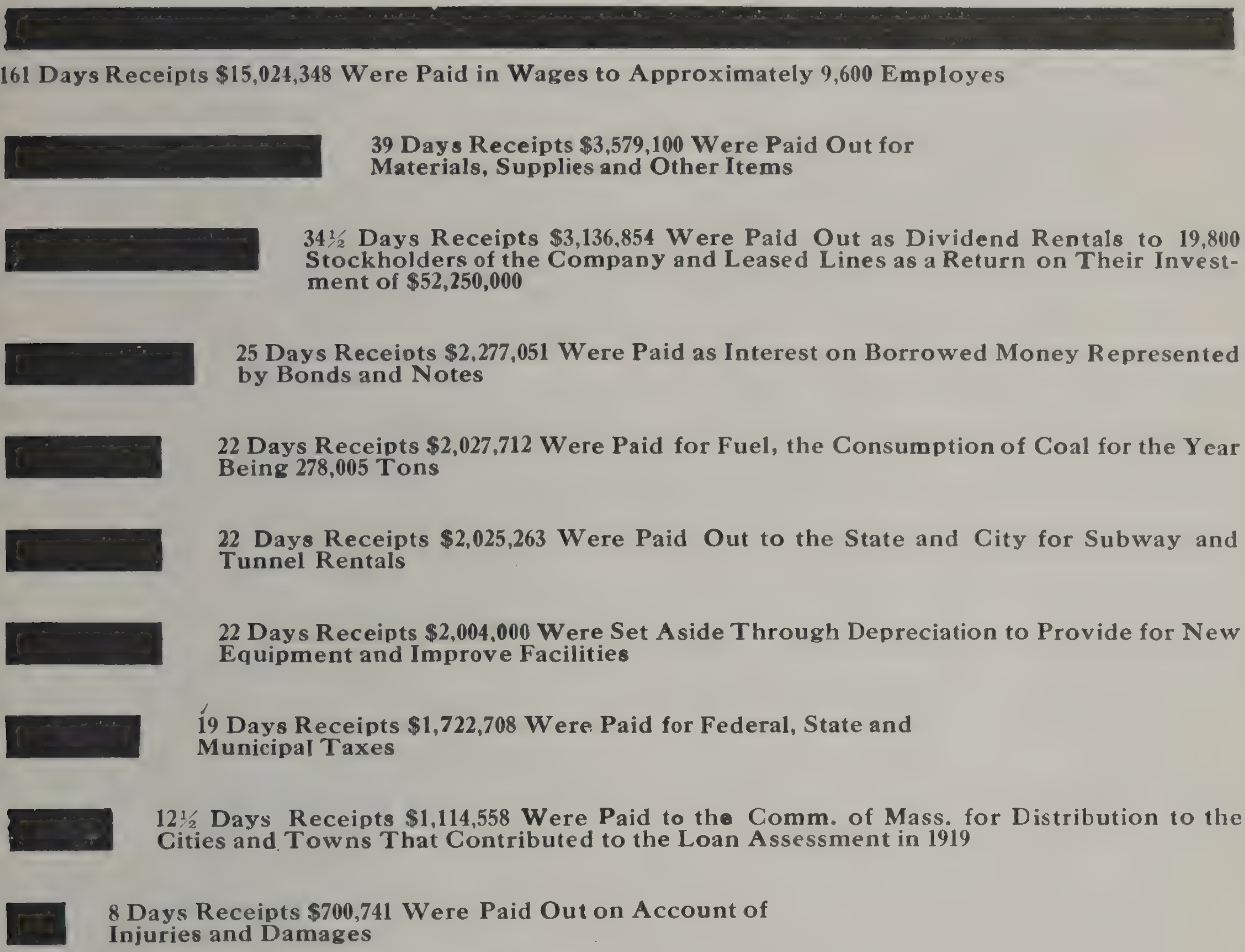
FIELDS CORNER STATION
THEN AND NOW





These cuts represent the offices of Fields Corner in 1878 and 1923 and show in a very vivid way the transformation which has taken place within this period.

WHERE THE REVENUE GOES



161 Days Receipts $15,024,348 Were Paid in Wages to Approximately 9,600 Employes

39 Days Receipts $3,579,100 Were Paid Out for Materials, Supplies and Other Items

34½ Days Receipts $3,136,854 Were Paid Out as Dividend Rentals to 19,800 Stockholders of the Company and Leased Lines as a Return on Their Investment of $52,250,000

25 Days Receipts $2,277,051 Were Paid as Interest on Borrowed Money Represented by Bonds and Notes

22 Days Receipts $2,027,712 Were Paid for Fuel, the Consumption of Coal for the Year Being 278,005 Tons

22 Days Receipts $2,025,263 Were Paid Out to the State and City for Subway and Tunnel Rentals

22 Days Receipts $2,004,000 Were Set Aside Through Depreciation to Provide for New Equipment and Improve Facilities

19 Days Receipts $1,722,708 Were Paid for Federal, State and Municipal Taxes

12½ Days Receipts $1,114,558 Were Paid to the Comm. of Mass. for Distribution to the Cities and Towns That Contributed to the Loan Assessment in 1919

8 Days Receipts $700,741 Were Paid Out on Account of Injuries and Damages

---

Be decent, be fair, be generous,
Boost—don't knock.—*Warren G. Harding.*

CO-OPERATION

It ain't the individual
Nor the army as a whole,
But the everlasting teamwork
Of every bloomin' soul.—*Kipling.*

A MEMORIAL POEM DEDICATED TO THE MEMORY OF OUR LAMENTED PRESIDENT, WARREN G. HARDING

Americans were called upon
  To show our Nation's grief
For him who sleeps in Marion
  Our Country's former Chief.
A loyal, true American
  Who tried to do his best
As one of God's most noble men,
  He's numbered with the blest.

Farewell, Farewell, beloved Chief
  Who sleeps in Marion!
Life's short at best (transition's brief)
  'Twixt here and the beyond.
God grant that your successor'll be
  As loyal, brave and true;
We pledge to him our loyalty,
  It's what you'd have us do.

Contributed by an employe of the company.

JULY OPERATION

	1923	1922
Excess cost of service over receipts....	$285,004.74	$104,149.97
Total revenue passengers	28,486,610	27,049,717
Per cent. 5c fare passengers	25.75	22.06
Trips operated	549,048	514,768
Miles operated	4,543,551	4,256,169
Average rate of fare	8.711c	8.896c
Tons of coal consumed	17,349	18,551
D. C. KW output—gross for month....	17,647,050	16,767,680

EDWARD DANA,
General Manager.

August 27, 1923

9388.7446A5

PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

SEPTEMBER, 1923

Vol. 2

SERVICE
SAFE FOR THE CAR RIDERS SURE
SATISFACTORY

No 9

EXPERIENCE OF EDWARD J. SWEENEY

The experience of Motorman Edward J. Sweeney, No. 1061, is not only of interest because of the fact that he is the oldest motorman in length of service on the Elevated Railway but because his experience with the road indicates that it is possible for a man to remain in service 53 years and continue a conscientious, earnest, steady worker interested in the public service.

He first went to work in 1870 watering horses. He worked in the blacksmith shop on Dorchester avenue and brought the water out in pails and the driver would stop the horse car while Mr. Sweeney gave the horses a drink. The rest of the time he shifted horses. His day began at 8 A. M. and ended at 8 P. M., seven days a week, for which he received $8.00 per week. He was promoted to shifter and he worked from 5.30 A. M. to 7 P. M., receiving $10.00 per week. Then he became a driver of a horse car at $1.75 per day, starting at 7.20 A. M. and finishing at 11 P. M. on a trip from the Old South Church. He states that many men would sleep in the lobby all night to get work the next morning.

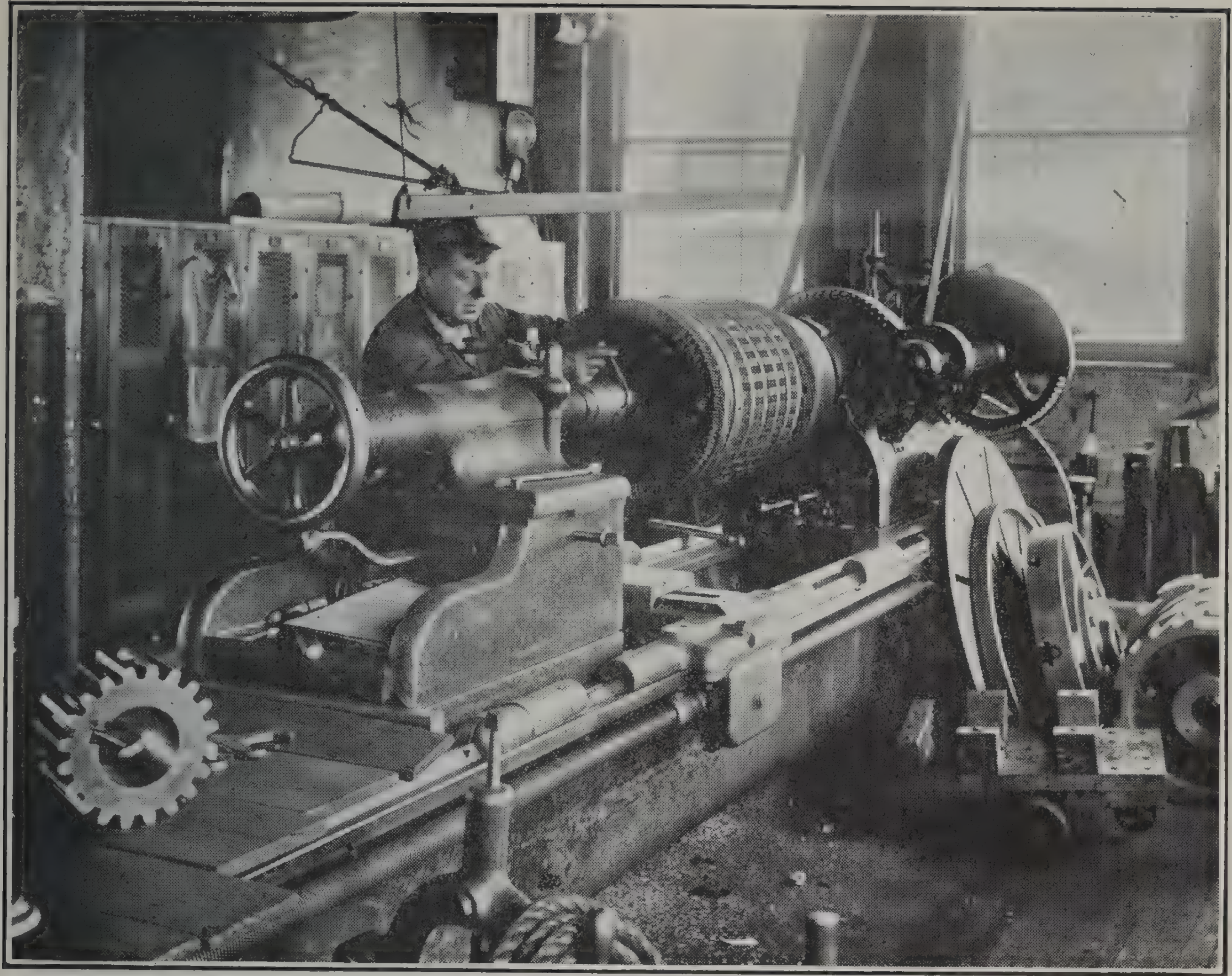
He describes snow storms where he worked 60 hours at a stretch, driving four-horse snow plows into a drift where he could see nothing but their ears sticking out and it required five men with shovels to dig them out. In those days it sometimes took six horses to pull a horse car in a snow storm.

Mr. Sweeney says there is nothing new in operating buses for many of the old men will remember the horse-drawn buses that used to be operated during snow storms when the rails became blocked.

MOTORMAN EDWARD J. SWEENEY, 1061

The essentials of street railroading remain, however, practically the same today as they always were. The business requires tact, good humor, reliability and horse sense. Mr. Sweeney says:

"In comparison with the comforts, equipment, hours and wages of the work today it is like heaven as compared with the old days when one had to face the storms, etc., and after 53 years in the service there is a difference so great one does not mind the work today."



42-INCH PUTNAM LATHE AT ALBANY STREET SHOPS

MACHINE TOOLS AT ALBANY STREET

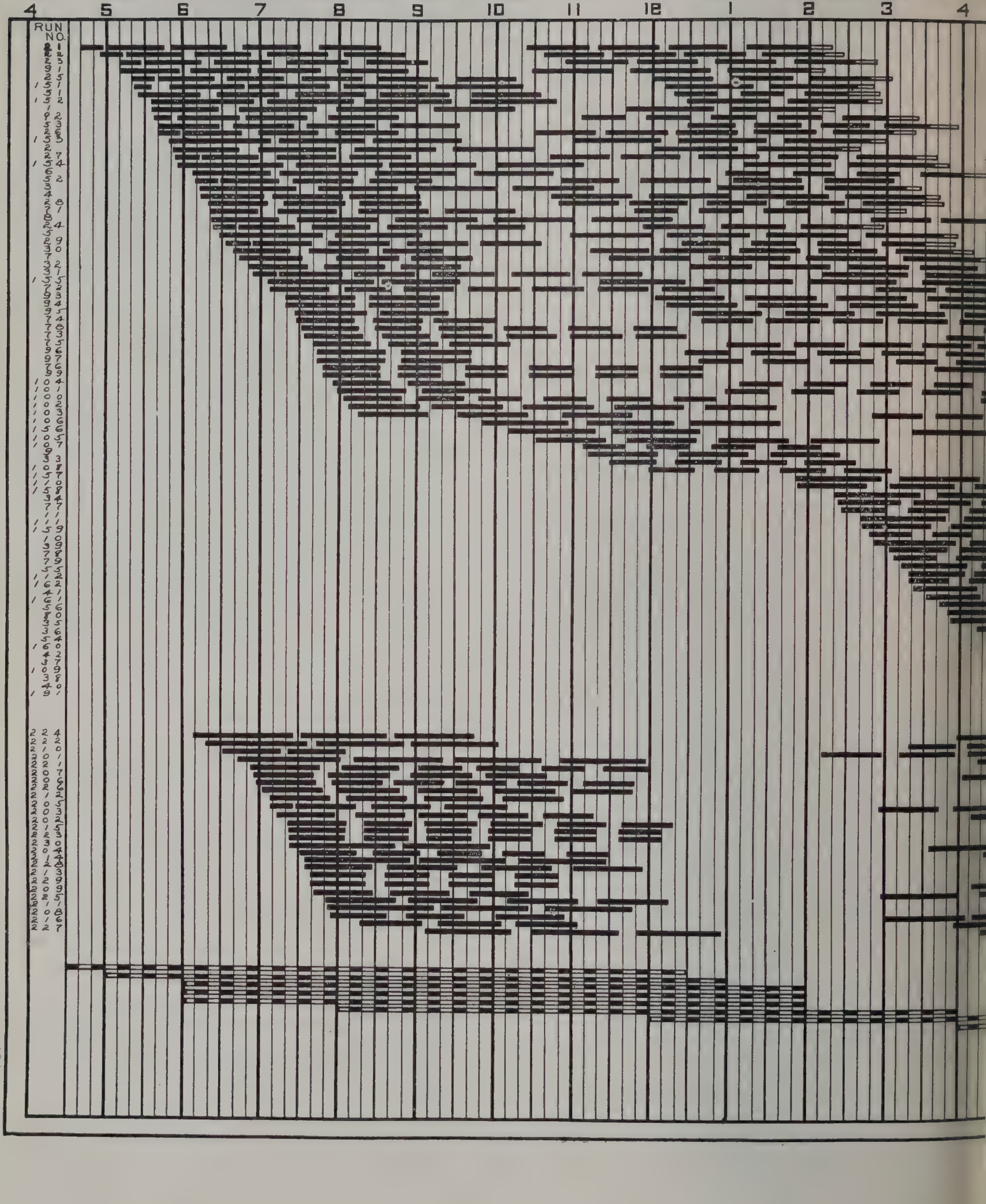
At the Albany Street Shops there are 80 machine tools of various types in constant use in making repairs and machining new parts for cars and power station equipment. The cutting of screw threads, making fits of various kinds between different kinds of metal is an act that can be acquired only through years of experience.

The cut shows one of our employes turning the pinion fit of a W. H. 301 Armature shaft which had been built up by the electric welder. This lathe is a 42-inch Putnam make and has been in constant use for 33 years and is in first-class condition largely from the fact that the employe operating it takes pride in its condition.

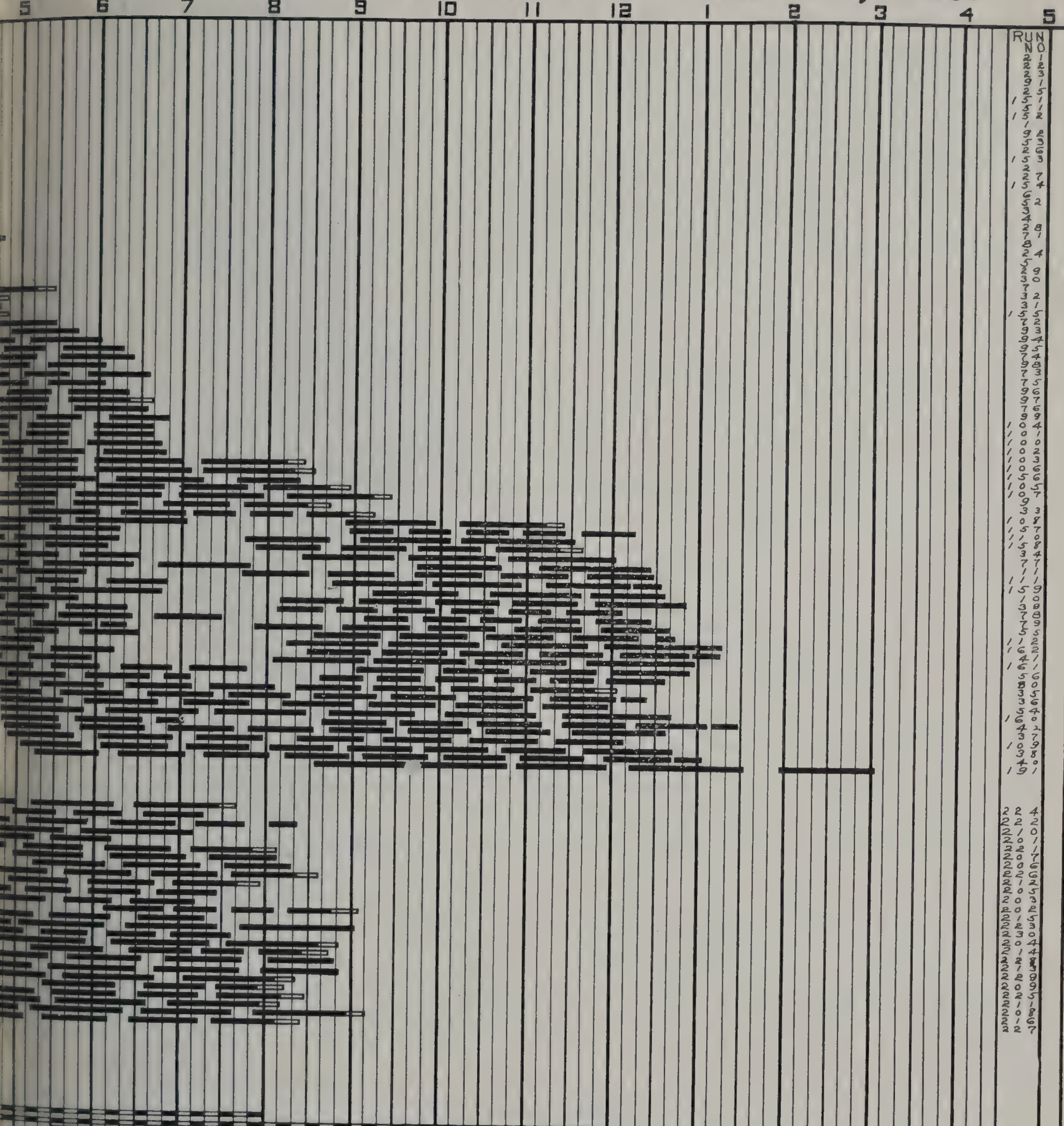
The output of motor bearings and trolley wheels in a single year amount to 9,000 trolley wheels, 10,408 armature bearings, 7,204 axle bearings, and 6,300 journal bearings.

"I will study and be prepared, so that some day if my opportunity comes I will be ready."—*Lincoln.*

DIV. 2. CYPRESS ST. STA. CONDS. WEEKDAY T



MeTABLE NO. 101·IN EFFECT JUNE 20, 1923.



GRAPHIC ILLUSTRATION OF TIMETABLE TRIPS AT CYPRESS STREET

The cut on the center page is a graphic method of showing the trips operated and their arrangement in runs at one rating station. There are operated 852 trips daily from Cypress Street Station on 18 different routes. The chart shows the number of runs being operated at all hours of the day as well as the sequence of runs from the first run in the morning which starts at 4.40 A. M. on to the latest run in the P. M., which starts at 8.33 P. M. The first group of runs are those known as 8 in 11, and the second group those known as 8 in 14, and the bottom line shows the cover periods assigned at that station.

The lines indicate the trips and the spaces between represent the layover time between trips or between halves of the runs.

On the entire system there are 15,740 trips operated daily made up of 2,928 runs, and the magnitude and detail of timetable construction can best be visualized by reference to such a chart as this.

BOSTON ELEVATED BOWLING LEAGUE

Tuesday, October 2d, at 6 P. M., the 14 teams comprising the league open the 1923-1924 season at the North Station Alleys, and for 26 weeks on Tuesday nights the bowlers will battle in friendly rivalry for supremacy.

The personnel of the 14 teams represents every department of the company, and any employe of the company is eligible to bowl on any team, at any time.

The increase of six teams over last year's league, the spirit of co-operation and good fellowship which is ever in evidence wherever one meets rival bowlers, the interest shown by many royal rooters and the officials bespeak a successful season.

SUGGESTIONS FOR BULLETINS

Suggestions for the monthly bulletins will be gladly received and given consideration if forwarded through the department to the General Manager.

STREET CAR SALESMANSHIP

(*From the Washington Star.*)

Salesmanship is the basis of good service in the line of merchandise and in all other fields. It is salesmanship that moves goods and also salesmanship that serves the public in terms of transportation. John Wanamaker founded and developed his immense business upon the principle that all his salesmen must satisfy the customers. They represented him, he told them, and he insisted that every person who entered his establishment should be not only provided with what was wanted, but should be treated with consideration, politeness and sympathy. The salesman, he said, is the customer's agent as well as the merchant's.

It would be well for those who operate public utilities to adopt this principle and to regard, for example, all motormen and conductors on the street railways as salesmen, engaged to serve the pecple with what they need, transportation. Just as John Wanamaker's store clerks sought always to give the customers what they wanted, with understanding of their needs, so the men who operate the street cars should be instructed and trained to regard the passengers in the same light.

Good salesmanship on the street cars means courtesy and consideration. It means that there is only one rule that should always govern, and that is the rule of carrying the people. It is of far more importance to do this than to maintain rigid schedules. It is bad salesmanship, for example, to run cars that are capable of carrying more passengers past waiting persons in the street because the motorman and the conductor are in a hurry to make their trips. It is poor salesmanship to regard passengers as mere freight without feelings. It is good salesmanship to show courtesy and to seek the co-operation of passengers in making the most possible room for those yet to come.

Salesmanship of this kind, to give the maximum service to the people with the available equipment, means supervision and instruction on the part of those "higher up" in the railroad management. Every operative should be trained in the proper attitude toward the people, whose fares pay the wages and other expenses and the dividends, if there are any.

Public complaints against car service are chronic, but the complaints can be lessened greatly by good salesmanship on the cars. It is not altogether a matter of the number of cars, or their frequency, or their capacity. It is largely a matter of the bearing of the men in charge toward the public. A crowded car can give good service if the crew is made to realize that it is responsible both to the public and the company.

CO-OPERATION—MOVING OFFICES

On August 24th the moving of the general office began and was completed on August 30th. Four hundred and seventy officials and employes were involved and the business of the organization could not be interrupted. It was an additional burden and many employes were engaged, packing or unpacking, many hours, outside of their usual work. The spirit of activity and co-operation is worthy of note and commendation.

WE ALWAYS TRAVEL FASTER WHEN WE'RE GOING DOWN THE HILL.

I've traveled through this world a bit and learned a thing or two,
I find there's no one like yourself to help your troubles through,
Sometimes you think you have a friend, but often 'tis the case,
You find a callous heart is hid behind a smiling face.
They say there's room right at the top, so get there if you can
With honest effort then take hold and face it like a man,
'Tis no use always drifting down like water to the mill,
We always travel faster when we're going down the hill.

Now if the sun's behind a cloud, don't mind a stormy day,
'Twill shine as bright as ever when the mist has rolled away,
So meet misfortune like a man, with hope and courage still,
We always travel faster when we're going down the hill.

Now if a fellow's sliding down, no matter what his name,
If he but need it, then take hold and help him just the same,
To everybody be a friend, let heart and hand be true,
Some day perhaps he'll have a chance to do the same for you,
Don't mind the roughness of the road, but smooth it with a song
A frown's no cheaper than a smile that helps the world along,
You may not get there very fast, but get there with a will,
We always travel faster when we're going down the hill.

Contributed by an Employe.

AUGUST OPERATION

	1923	1922
Excess cost of service over receipts....	$319,516.56	$217,128.55
Total revenue passengers..............	28,086,112	26,877,682
Per cent. 5c fare passengers...........	25.50	22.33
Trips operated	550,711	526,245
Miles operated	4,555,198	4,308,988
Average rate of fare.................	8.713c	8.883c
Tons of coal consumed...............	17,129	19,239
D. C. KW output—gross for month....	17,626,755	17,066,874

EDWARD DANA,
General Manager.

September 21, 1923.

9358.7446A5

PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

OCTOBER, 1923

Vol. 2 No. 10

SERVICE
SAFE FOR THE CAR RIDERS SURE
SATISFACTORY

THE AWARD

The Board of Arbitration has made its decision and the renewal of the Agreement has been signed.

It is now important that we take up the problem confronting us during the coming year with fresh energy and a determination to operate the property in the interest of the car riders within the limits of the revenue to be received.

If mutual co-operation means mutual benefits it means it more during the next nine months than it ever has before. Our organization is made of the material that can make good and efficiency must be the slogan from now on.

Co-operation means securing all the revenue, avoiding accidents, being courteous and considerate of car riders, helping one another, conserving supplies and materials, not wasting time, and doing it every day all of the time.

LET'S GO

GEORGE D. COBURN
54 Years' Service at Bartlett St. Shops

Mr. George D. Coburn, now employed as a painter and in charge of the Paint Stock Room is the oldest employee, in years of service, at Bartlett St. Shops. He has been employed for more than 54 years.

Mr. Coburn was first employed in May, 1869, as a conductor on the old Metropolitan Street Railway and in January, 1885, went to the Shops as a painter. In 1888 he was transferred to the Paint Stock Room and has served there continuously since that time.

During the Civil War Mr. Coburn served two terms with the Sixth Massachusetts Infantry and is now Senior Vice Commander of Post 26, G. A. R.

A SITUATION WHICH NEEDS ATTENTION

Accidents January 1 to October 1

	Number		*Per Million Miles*		*Percents*	
	1922	*1923*	*1922*	*1923*	*1922*	*1923*
Vehicle collisions	3752	5740	307	397	75.4	79.7
Car collisions	201	267	18	19	4.4	3.8
Personal collisions	229	326	15	21	3.7	4.2
Alighting accidents	670	599	42	35	10.3	7.0
Boarding accidents	475	517	25	26	6.1	5.7
Totals	5327	7449	407	498	100.0	100.0

The figures above plainly indicate the problem with which we are confronted. "Safety First" must be more than a mere slogan and the only way in which we may have proof of it is by reducing the number of accidents. The real problem is the vehicle collisions and if motormen set their mind to the task the next record should be of the right character. Reduce the vehicle collisions. Take no chances. It is a waste and an unnecessary burden on the car rider.

WHO'S WHO

Generally speaking, there are four classes of individuals:

1. The one who must be told what to do, how to do it, and checked up in the doing of it.
2. The one who must be told what to do, how to do it, but who is so thorough as not to need to be checked up in the doing of it.
3. The one who must be told what to do, but who is resourceful enough not to need to be told how to do it, and who is so thorough as not to need to be checked up in the doing of it.
4. The one to whom a general policy may be given, and who is resourceful enough not to need to be told what to do or how to do it, or to be checked up in the doing of it.-it.—*The Military Engineer.*

REVENUE PASSENGERS

The chart showing the fluctuation of revenue passengers carried each month from January, 1917, to September, 1923, discloses some very interesting facts.

In the first place few persons realize the great variation in passenger load which occurs from month to month even in a single year. For instance, the variation between August, 1923, in which month 28 million revenue passengers and March, 1923, in which 35 million passengers were carried, indicates the nature of the transportation problem. The effect which various conditions have upon traffic is also clearly shown.

The reduction of the average fare per revenue passenger which now stands at 8.7 is clearly indicated on the chart.

The revenue rides per capita which indicates the riding habit of the population has been as follows during these years:

1917	306	
1918	269	
1919	272	
1920	281	
1921	277	
1922	288	
1923	307	(estimated)

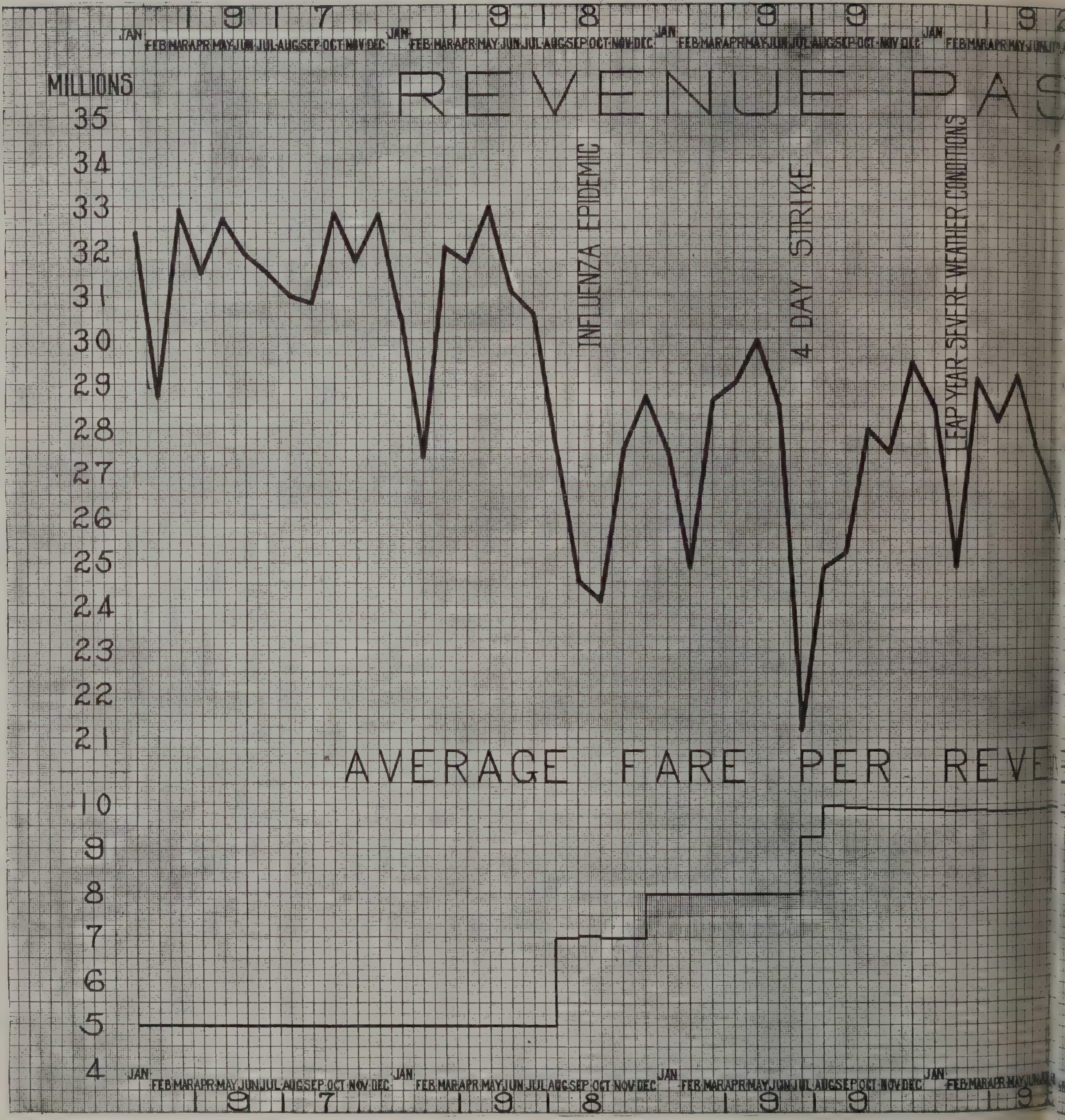
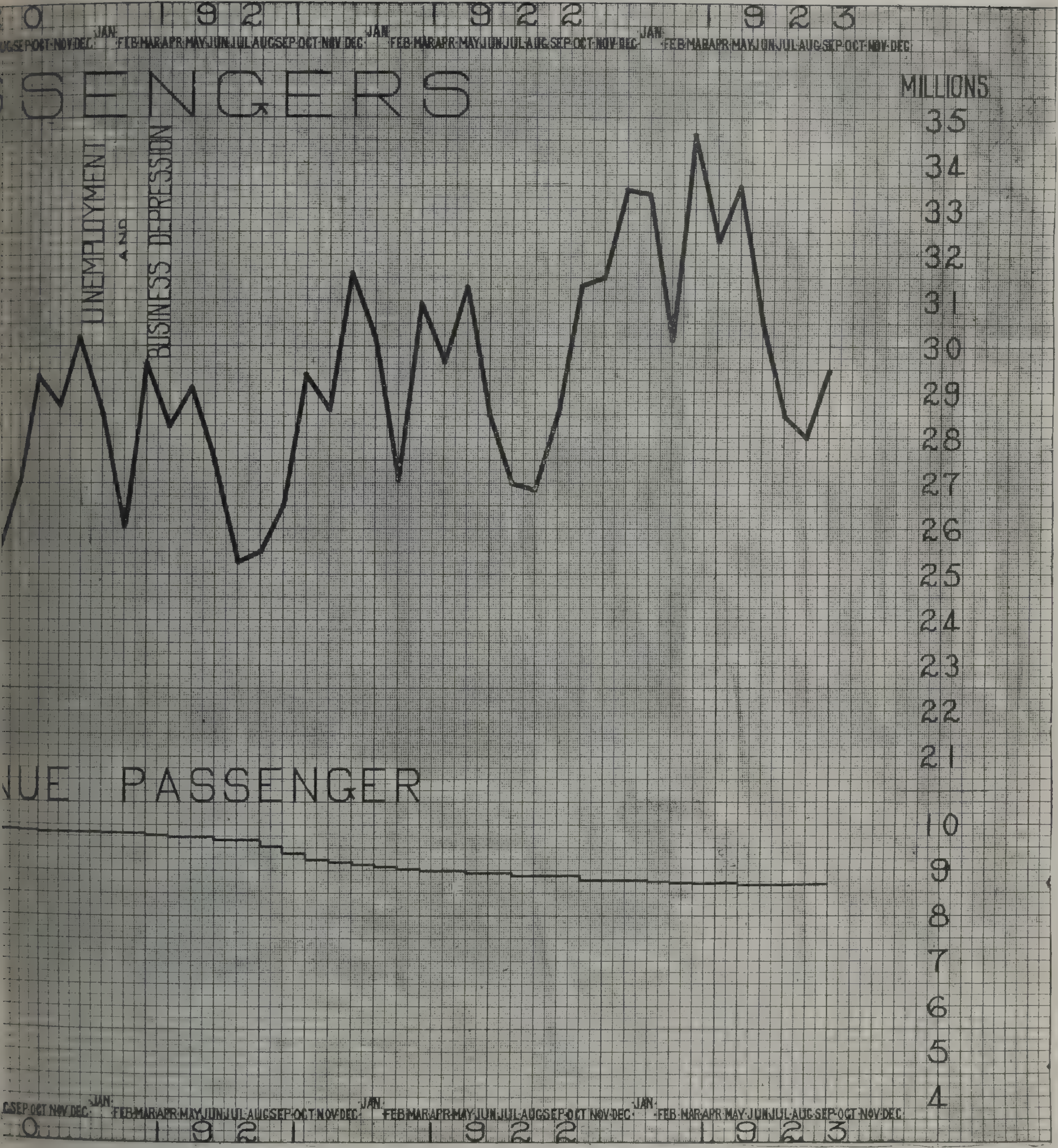


CHART OF REVENUE PASSENGERS MONTHLY



AND AVERAGE FARE PER REVENUE PASSENGER

BARTLETT STREET REPAIR SHOPS

THE CAR REPAIR SHOPS

The Car Repair Shops were located at Roxbury Crossing until April, 1886, when they were moved to the Old Institute Building on Huntington Avenue. This building was burned out on June 21, 1886, and the Repair Shops were then moved to the Bartlett St. Car Barn and during the summer of 1886 occupied the building facing Bartlett Street, now known as Shop No. 3, in the space now used for the Instruction School and for a storage room. At that time the first floor of the building was used as an operating car barn known as Bartlett Street Car House.

In February, 1887, a new building was erected facing Washington Street, using the brick and timbers salvaged from the Old Institute Building ruins. This building is now known as Shop No. 1 and has been used continuously since then as a repair shop.

When the horse cars were discontinued at the Bartlett Street Stable it was remodelled to be used as a repair and paint shop for cars and is now known as Shop No. 2.

In 1903 Shop No. 4 was built at the rear of Guild Street Shops to take care of elevated car repairs and painting.

The total investment at Bartlett Street Shops represents $864,552, and there are 352 employees in service there.

After 37 years these shops will be replaced, in 1924, by the modern plant now nearly completed at Everett.

WHAT IS SUCCESS?

It's doing your job the best you can
And being just to your fellow-man.
It's making money, but holding friends,
And staying true to your aims and ends.
It's figuring how, and learning why
And looking forward and thinking high,
And dreaming a little and doing much;
It's keeping always in close touch
With what is finest in word and deed.
It's being thorough, yet making speed,
It's daring blithly the field of chance
While making labour a brave romance.
It's going onward despite defeat,
And fighting staunchly, but keeping sweet.
It's being clean and it's playing fair;
It's laughing lightly at Dame Despair.
It's looking up at the stars above,
And drinking deeply of life and love.
It's struggling on with the will-to-win
But taking loss with a cheerful grin.
It's sharing sorrow, and work, and mirth,
And making better this good old earth;
It's serving, striving through strain and stress,
It's doing your noblest—That's Success.

—*"The Motorman and Conductor"*

A "SAND LIBRARY"

In Chicago is a "library" made up of sand—just bottles of sand. There are 2,800 of these bottles and they form part of the Structural Materials Library of the Lewis Institute.

This "sand library" was started ten years ago and is said to contain specimens of sand from every state in the Union and from many foreign countries.

Why such a collection?

To help put building on a more scientific basis. Each of the samples has been carefully tested, and a record made of each. These records include the source of the specimen, the grading, silt content, and the results of the colorimetric test for organic impurities. In most instances mortar and concrete tests also have been made. These tests were made to ascertain the suitability of the various sands for concrete and mortar work.

This is probably the only collection of its kind in existence, and the information contained on the labels of the bottles gives an interesting insight into the part that science is playing in modern industrial undertakings.

—*Business Chemistry.*

Incidentally we have a group of 9,500 employees, each with an individual variety of "sand" of which we are proud.

Lives of great men all remind us
We can make our lives sublime,
And, departing, leave behind us
Footprints on the sands of time.
—*Longfellow.*

SEPTEMBER OPERATION

	1923	1922
Total revenue passengers	29,454,932	28,387,507
Per cent. 5c fare passengers	25.97	22.55
Trips operated	533,819	503,609
Miles operated	4,454,770	4,147,320
Average rate of fare	8.701	8.872
Tons of coal consumed	16,244	19,807
D. C. KW output—gross for month	17,542,647	16,924,390

EDWARD DANA,
General Manager.

October 27, 1923

9388.7H46A5

— PUBLIC TRUSTEES —

BOSTON ELEVATED RAILWAY

CO-OPERATION

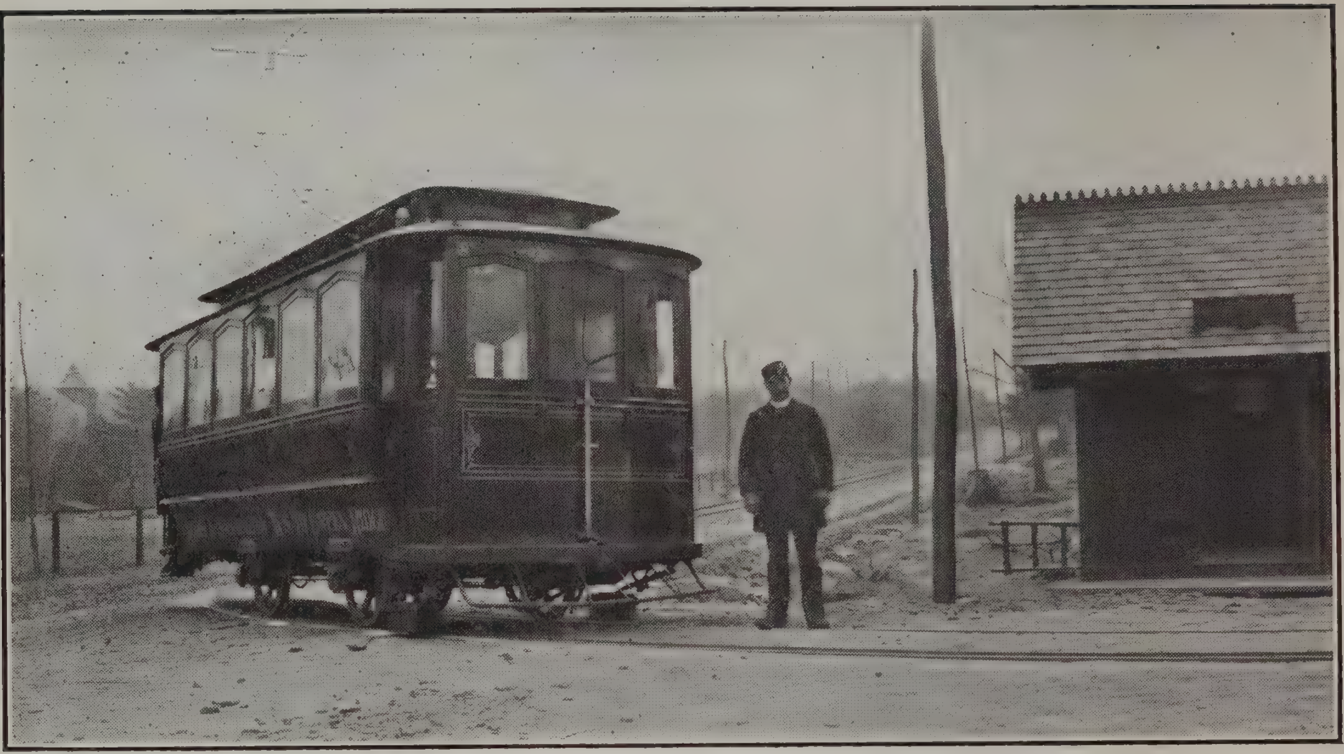
NOVEMBER, 1923

Vol. 2

SERVICE
FOR THE
SAFE CAR RIDERS SURE
SATISFACTORY

No 11

EXPERIMENTAL TROLLEY LINE



ONE OF THE FIRST ELECTRIC TROLLEY CARS OPERATED IN THIS COUNTRY

The following description of a car which was one of the first ones operated by electricity may be of interest.

While on a trip to Johnstown, Pa., in 1887, to inspect the manufacture of track special work, the writer stopped off at Scranton and there first saw an electric car.

Attention was called to it by the guests at the hotel, who rushed out on to the sidewalk to see the novelty when it was heard coming.

A little later in the day an opportunity was found to photograph it and to look it over.

The motor was on the front platform and was connected by a chain to a sprocket wheel on the front axle.

The trolley was like a little car. It ran on top of the wire, and was connected with the motor by a flexible cord.

While running on an upgrade the trolley had the appearance of towing the big car, but at times the big car would shoot ahead and appear to be towing the little car.

When cars met at a turnout a long pole was used to remove one trolley to permit the other to pass.

In addition to all the usual possibilities for an accident the motorman had to exercise eternal vigilance to avoid being struck by the trolley when it jumped off the wire which, like all trolleys, it occasionally did.

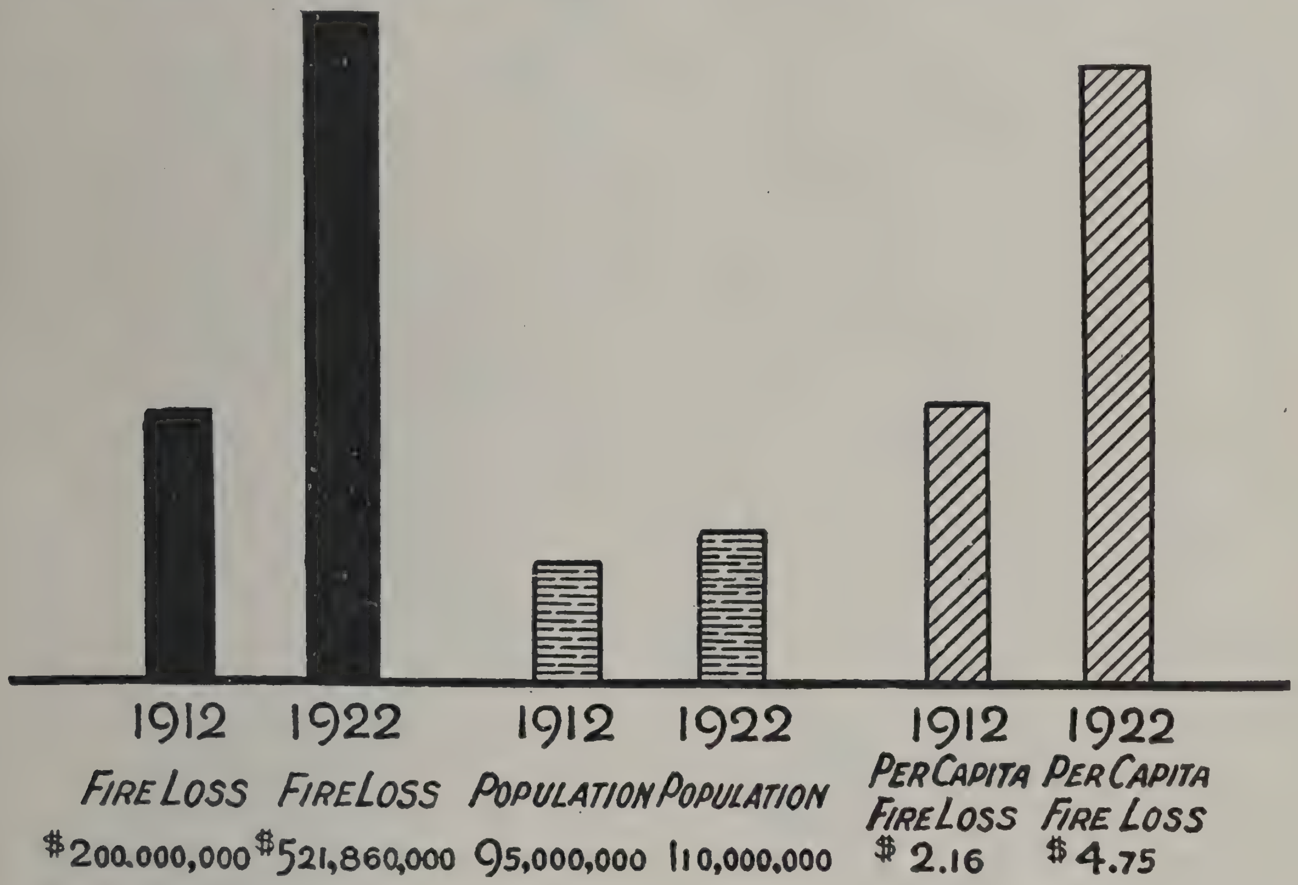
On this same trip the writer first saw incandescent electric lights used commercially in the hotels and elsewhere.

The reason why this section of the country was one of the first to adopt the use of electricity was because it could be produced so cheaply as they used for fuel the culm or waste from the mines which cost little or nothing.

"One of our Engineers."

FIRE LOSSES

A fire loss of $521,860,000 in twelve months—that was the loss in the United States during 1922. Think what it would mean to have this wealth preserved in the business and homes from which it was taken! — STOP THE FIRE HAZARD.—*"Protection"*.



RUSH HOUR EFFICIENCY

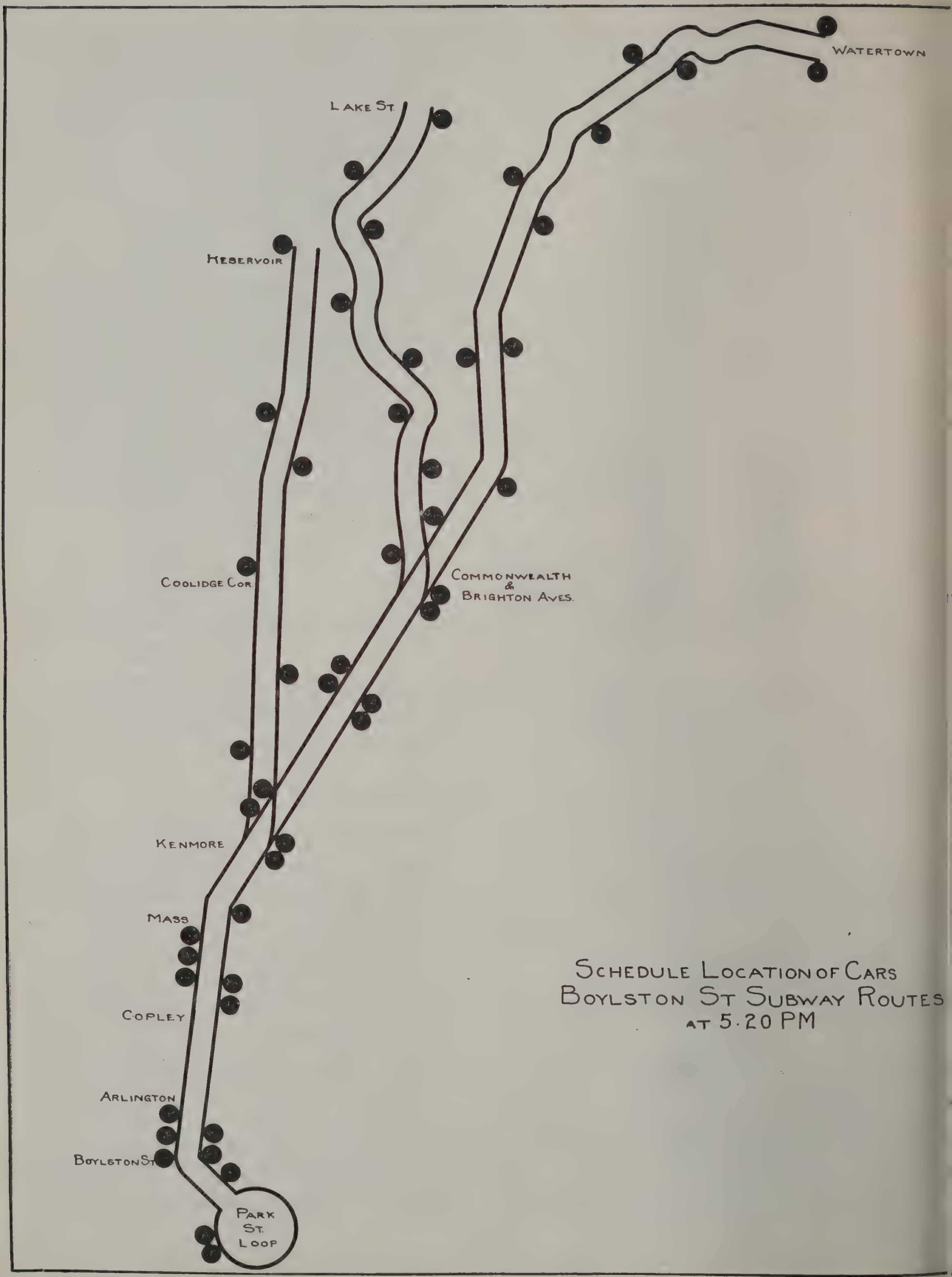
A football team accomplishes maximum results when each individual carries out his assignment in the plays and the team functions as a unit.

The rush hour is the trying period in transportation and requires co-operation of all concerned if best results are to be obtained.

Did you ever stop to think what an important bearing the carrying out of assignments by car crews had upon the comfort and efficiency of the rush hour problem?

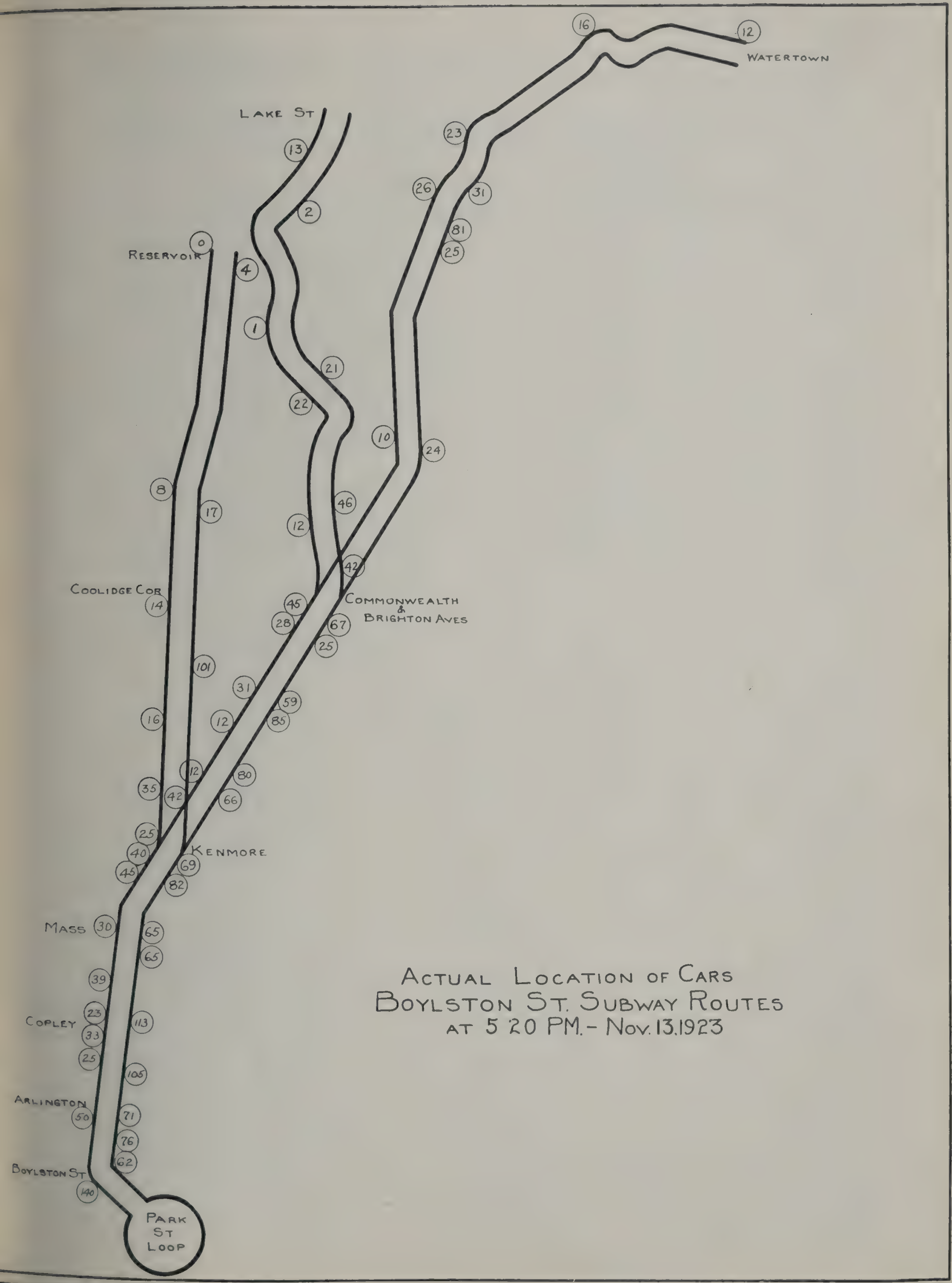
Schedules are worked back from the traffic figures but if the assignments are not carried out, if some car is ahead or others late, all cars on the line are vitally affected.

The diagram on pages 4 and 5 imagines a view of the 5:20 P. M. rush hour conditions of Boylston Street Subway lines. The full circles indicate the scheduled location of cars at this particular time; in other words, the assignments. The hollow circles indicate the actual location by the watch, or the way the assignments were carried out. The figures in the hollow circles indicate the passenger load.



Schedule Location of Cars
Boylston St Subway Routes
at 5.20 PM

RUSH H



ACTUAL LOCATION OF CARS
BOYLSTON ST. SUBWAY ROUTES
AT 5 20 PM. - Nov. 13. 1923

FICIENCY

NUMBER OF PASSENGERS CARRIED ON STREET CARS

(Taken from Preliminary Report of the U. S. Dept. of Census on Electric Railway Traffic in 1922)

The table showing the number of passengers carried on street cars in the United States for the year 1922 discloses very interesting information.

It is interesting to note in this connection that the total number of passengers carried on the Boston Elevated lines for the year ending December 31, 1922, was 356,593,942 and was greater than the number of revenue passengers carried on all the lines in any one state except for the nine states which are marked.

Many people also fail to appreciate the fact that this number of revenue passengers — 356,593,942 —is more than double the total number of passengers carried in the year 1922 (153,213,177) on all the branches and lines of the Bangor & Aroostook, Atlantic & St. Lawrence, Maine Central, Central Vermont, Rutland, Boston & Maine, Boston & Albany, New York, New Haven & Hartford and Central New England, or in other words, the New England steam railroad group.

State	1920 Population	Revenue Passengers Carried	Revenue Rides per Capita
Alabama	2,348,174	65,979,711	28
Arizona	334,162	5,473,890	16
Arkansas	1,752,204	29,154,627	17
*California	3,426,861	732,317,311	214
Colorado	939,629	81,613,515	87
Connecticut	1,380,631	182,940,659	132
Delaware	223,003	20,860,564	94
Dist. of Columbia	437,571	150,681,906	344
Florida	968,470	41,291,825	43
Georgia	2,895,832	105,876,182	37
Idaho	431,866	3,221,682	7
*Illinois	6,485,280	1,127,088,816	174
Indiana	2,930,390	222,478,995	76
Iowa	2,404,021	95,493,755	40
Kansas	1,769,257	37,742,086	21
Kentucky	2,416,630	115,593,599	48
Louisiana	1,798,509	128,228,075	71
Maine	768,014	49,990,621	65
Maryland	1,449,661	246,482,671	170
*Massachusetts	3,852,356	731,976,410	190

State	1920 Population	Revenue Passengers Carried	Revenue Rides per Capita
*Michigan	3,668,412	450,183,022	123
Minnesota	2,387,125	262,740,536	110
Mississippi	1,790,618	8,412,372	5
*Missouri	3,404,055	463,524,275	136
Montana	548,889	15,141,582	28
Nebraska	1,296,372	76,845,760	59
Nevada	77,407	480,000	6
New Hampshire	443,083	19,639,754	44
*New Jersey	3,155,900	393,883,078	125
New Mexico	360,350	1,383,016	4
*New York	10,385,227	3,058,680,799	295
North Carolina	2,559,123	29,619,319	12
North Dakota	646,872	3,378,686	5
*Ohio	5,759,394	750,659,333	130
Oklahoma	2,028,283	35,402,037	17
Oregon	783,389	71,803,754	92
*Pennsylvania	8,720,017	1,358,009,374	156
Rhode Island	604,397	127,828,404	211
South Carolina	1,683,724	20,211,444	12
South Dakota	636,547	2,022,714	3
Tennessee	2,337,885	110,369,343	47
Texas	4,663,228	187,508,414	40
Utah	449,396	33,622,564	75
Vermont	352,428	6,949,976	20
Virginia	2,309,187	116,289,084	50
Washington	1,356,621	141,336,752	104
West Virginia	1,463,701	91,079,124	62
Wisconsin	2,632,067	180,184,827	68
Wyoming	194,402	683,964	4

THE ECHO

A boy complained to his mother that there was a bad boy in the woods near his house. His mother went with him, and as they came to a certain spot the boy cried out: "You are a bad boy," and apparently the voice of another boy not far off replied: "You are a bad boy." The mother understood at once that her son heard only the echo of his own voice, so she said to him "Speak kindly and see if this boy does not speak kindly to you." The boy shouted: "You are a good boy." Of course the reply came: "You are a good boy." "I like you" and the voice replied: "I like you."

The story of the echo is the story of life. What we see that is disagreeable and evil in our neighbors is often the reflection of what we are ourselves.

IF I WERE A BOSS

If I were a boss I would like to say:
"You did a good job here yesterday."
I'd look for a man, or a girl, or boy
Whose heart would leap with a thrill of joy
At a word of praise, and I'd pass it out
Where the crowd could hear as I walked about.

If I were the boss I would like to find
The Fellow whose work is the proper kind;
And whenever to me a good thing came,
I'd ask to be told the toiler's name,
And I'd go to him and I'd pat his back
And I'd say "That was perfectly splendid, Jack!"

Now a bit of praise isn't much to give,
But it's dear to the hearts of all who live;
And there's never a man on this good old earth
But is glad to be told that he's been of worth;
And a kindly word when the work is fair
Is welcomed and wanted everywhere.

If I were a boss, I am sure I should
Say a kindly word whenever I could,
For the man who has given his best by day
Wants a little more than his weekly pay;
He likes to know, with the setting sun,
That his boss is pleased with the work he's done.

—*Edgar Guest.*

OCTOBER OPERATION

	1923	1922
Excess of revenue over cost of service	$15,830.84	$253,621.08
Total revenue passengers	33,432,368	31,363,151
Revenue pasengers per mile operated	7.075	7.337
Per cent. 5c fare passengers	26.31	23.61
Miles operated	4,733,556	4,288,573
Trips operated	564,000	517,264
Average rate of fare	8.685	8.819
Complaints of treatment by employes	121	102
D. C. KW output—gross for month	19,359,475	18,978,450
Maximum KW hour load	62,940	64,470
Tons of coal consumed	18,855	21,821
Lbs. of coal burned per KW	2.182	2.575

EDWARD DANA,
General Manager.

November 30, 1923.

9388.7446A5

— PUBLIC TRUSTEES —

BOSTON ELEVATED RAILWAY

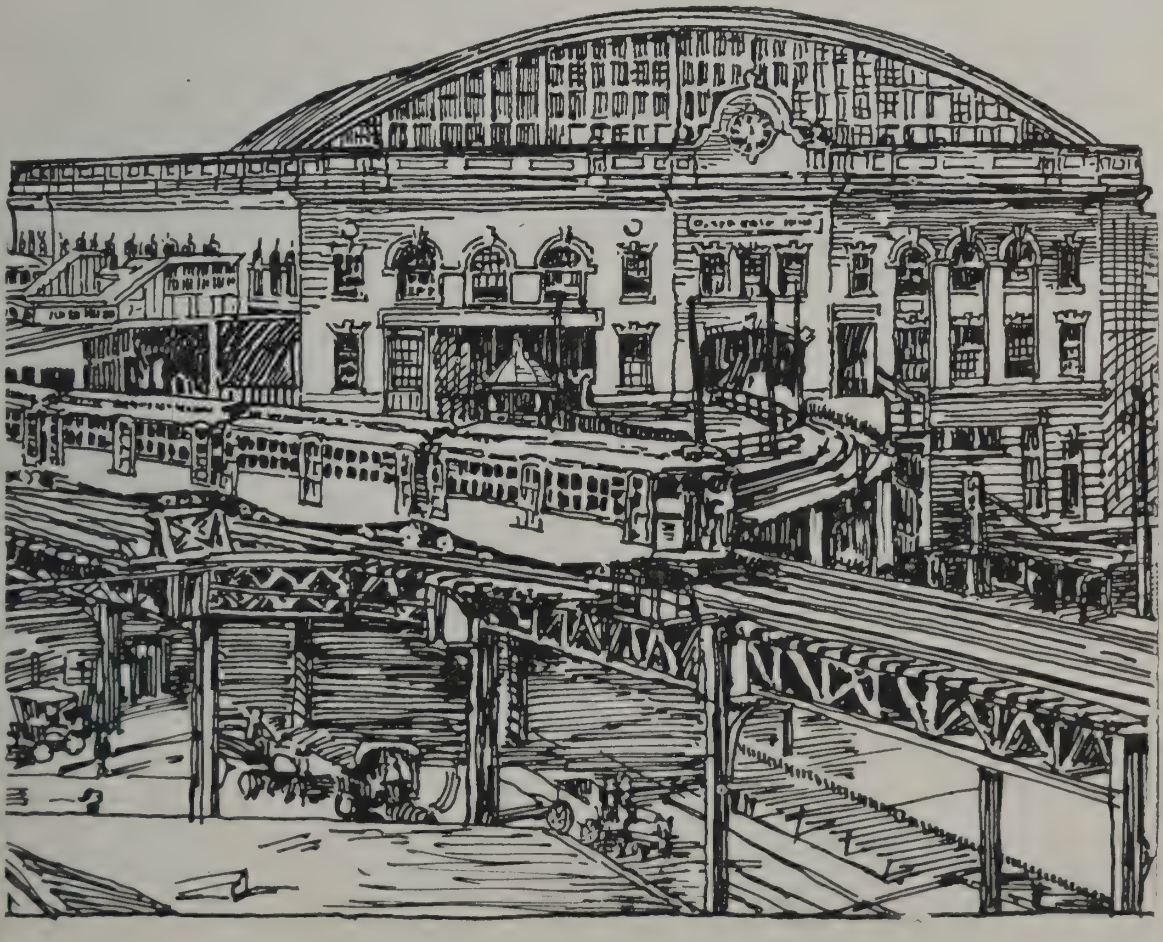
CO-OPERATION

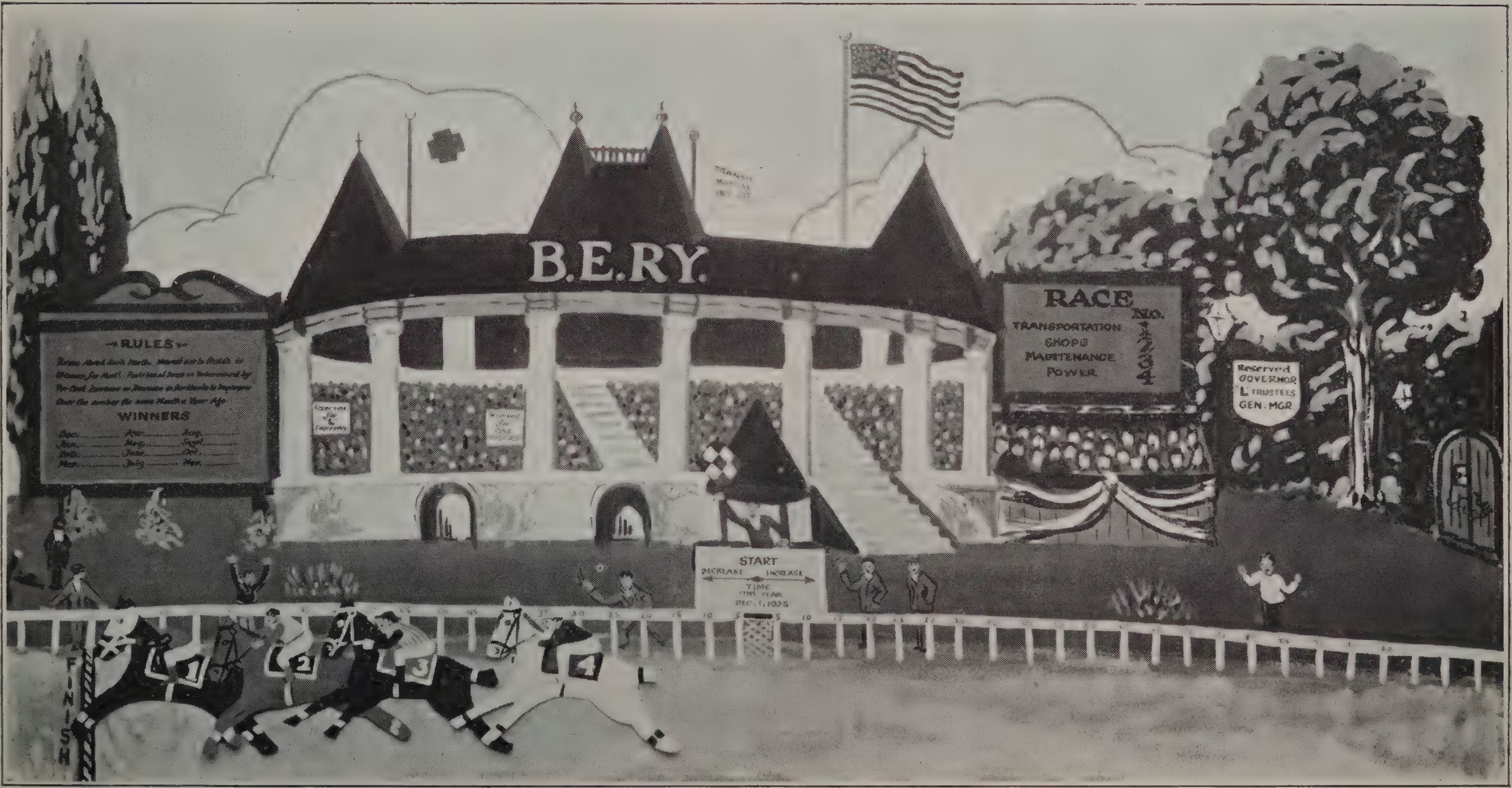
DECEMBER, 1923

Vol. 2

No. 12

SERVICE
FOR THE
SAFE CAR RIDERS SURE
SATISFACTORY





GRAPHIC REPRESENTATION OF INCREASE OR DECREASE IN INDUSTRIAL ACCIDENTS

GRAPHIC REPRESENTATION OF INCREASE OR DECREASE IN INDUSTRIAL ACCIDENTS

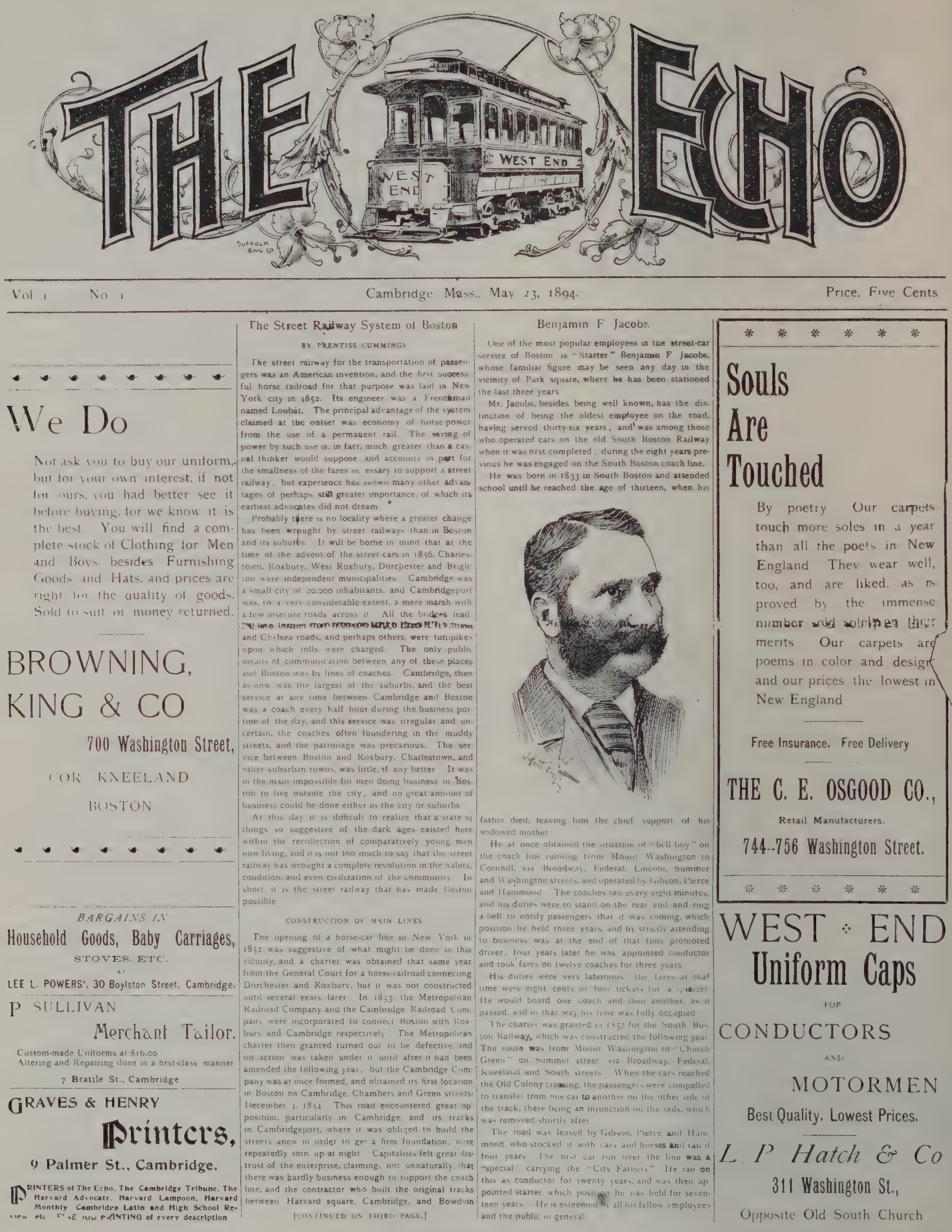
Beginning in January, 1924, graphic charts will be posted at various points on the system for employes to watch the increase or decrease in industrial accidents, divided into the four departments: Transportation, Shops, Maintenance, and Power. The horses will represent each of the departments, but the comparison will be each department with itself, as there is no connection as between two departments.

It is hoped that this graphic method of showing the record of each department against that of the year previous will create interest and concentrate attention upon the need for all employes and supervisors to constantly watch industrial accidents in order that they may be gradually reduced.

CHRISTMAS CHEER

The girls of the Bureau of Audit brought the spirit of Christmas to the St. Vincent Orphan Asylum, Camden street, when they presented the orphanage with 70 dolls which they had dressed, and sufficient toys, books and games to supply all of the children. They also made and filled 150 bags of candy and nuts, and provided a Christmas tree and ice cream for the Christmas dinner.

The cut shows the dolls at the St. James Avenue office before they were delivered to the orphanage.



WEST END
SUFFOLK ENG CO

THE ECHO

Vol 1 No 1 Cambridge Mass., May 23, 1894. Price, Five Cents

We Do

Not ask you to buy our uniform, but for your own interest, if not for ours, you had better see it before buying, for we know it is the best. You will find a complete stock of Clothing for Men and Boys, besides Furnishing Goods and Hats, and prices are right for the quality of goods. Sold to suit or money returned.

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PRINTERS of The Echo, The Cambridge Tribune, The Harvard Advocate, Harvard Lampoon, Harvard Monthly, Cambridge Latin and High School Review, etc. FINE JOB PRINTING of every description

The Street Railway System of Boston

BY PRENTISS CUMMINGS

The street railway for the transportation of passengers was an American invention, and the first successful horse railroad for that purpose was laid in New York city in 1852. Its engineer was a Frenchman named Loubat. The principal advantage of the system claimed at the outset was economy of horse-power from the use of a permanent rail. The saving of power by such use is, in fact, much greater than a casual thinker would suppose and accounts in part for the smallness of the fares necessary to support a street railway, but experience has shown many other advantages of perhaps still greater importance, of which its earliest advocates did not dream

Probably there is no locality where a greater change has been wrought by street railways than in Boston and its suburbs. It will be borne in mind that at the time of the advent of the street cars in 1856, Charlestown, Roxbury, West Roxbury, Dorchester and Brighton were independent municipalities Cambridge was a small city of 20,000 inhabitants, and Cambridgeport was, to a very considerable extent, a mere marsh with a few insecure roads across it All the bridges lead [illegible] and Chelsea roads, and perhaps others, were turnpikes upon which tolls were charged. The only public means of communication between any of these places and Boston was by lines of coaches. Cambridge, then as now, was the largest of the suburbs, and the best service at any time between Cambridge and Boston was a coach every half hour during the business portion of the day, and this service was irregular and uncertain, the coaches often foundering in the muddy streets, and the patronage was precarious. The service between Boston and Roxbury, Charlestown, and other suburban towns, was little, if any better It was in the main impossible for men doing business in Boston to live outside the city, and no great amount of business could be done either in the city or suburbs

At this day it is difficult to realize that a state of things so suggestive of the dark ages existed here within the recollection of comparatively young men now living, and it is not too much to say that the street railway has wrought a complete revolution in the habits, condition, and even civilization of the community In short, it is the street railway that has made Boston possible

CONSTRUCTION OF MAIN LINES

The opening of a horse-car line in New York in 1852 was suggestive of what might be done in this vicinity, and a charter was obtained that same year from the General Court for a horse-railroad connecting Dorchester and Roxbury, but it was not constructed until several years later In 1853, the Metropolitan Railroad Company and the Cambridge Railroad Company were incorporated to connect Boston with Roxbury and Cambridge respectively The Metropolitan charter then granted turned out to be defective, and no action was taken under it until after it had been amended the following year, but the Cambridge Company was at once formed, and obtained its first location in Boston on Cambridge, Chambers and Green streets, December 4, 1854. This road encountered great opposition, particularly in Cambridge, and its tracks in Cambridgeport, where it was obliged to build the streets anew in order to get a firm foundation, were repeatedly torn up at night Capitalists felt great distrust of the enterprise, claiming, not unnaturally, that there was hardly business enough to support the coach line, and the contractor who built the original tracks between Harvard square, Cambridge, and Bowdoin

[CONTINUED ON THIRD PAGE.]

Benjamin F Jacobs.

One of the most popular employees in the street-car service of Boston is "Starter" Benjamin F Jacobs, whose familiar figure may be seen any day in the vicinity of Park square, where he has been stationed the last three years

Mr. Jacobs, besides being well known, has the distinction of being the oldest employee on the road, having served thirty-six years; and was among those who operated cars on the old South Boston Railway when it was first completed; during the eight years previous he was engaged on the South Boston coach line.

He was born in 1833 in South Boston and attended school until he reached the age of thirteen, when his father died, leaving him the chief support of his widowed mother

Suffolk Eng Co

He at once obtained the situation of "bell boy" on the coach line running from Mount Washington to Cornhill, via Broadway, Federal, Lincoln, Summer and Washington streets, and operated by Gibson, Pierce and Hammond The coaches ran every eight minutes, and his duties were to stand on the rear end and ring a bell to notify passengers that it was coming, which position he held three years, and by strictly attending to business was at the end of that time promoted driver; four years later he was appointed conductor and took fares on twelve coaches for three years

His duties were very laborious the fares at that time were eight cents or four tickets for a quarter He would board one coach and then another, as it passed, and in that way his time was fully occupied

The charter was granted in 1857 for the South Boston Railway, which was constructed the following year The route was from Mount Washington to "Church Green" on Summer street via Broadway, Federal, Kneeland and South streets When the cars reached the Old Colony crossing, the passengers were compelled to transfer from one car to another on the other side of the track, there being an injunction on the rails, which was removed shortly after

The road was leased by Gibson, Pierce and Hammond, who stocked it with cars and horses and ran it four years The first car run over the line was a "special" carrying the "City Fathers" He ran on this as conductor for twenty years, and was then appointed starter, which position he has held for seventeen years He is esteemed by all his fellow employees and the public in general

* * * * * *

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By poetry Our carpets touch more soles in a year than all the poets in New England They wear well, too, and are liked, as is proved by the immense number [illegible] their merits Our carpets are poems in color and design and our prices the lowest in New England

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Best Quality, Lowest Prices.
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311 Washington St.,
Opposite Old South Church

THE ECHO

Recently there has been forwarded to the Library a copy of the first issue of The Echo, a publication by the employes of the West End Street Railway, which was first printed on May 23, 1894, and later discontinued.

While it was impossible to reprint the entire first copy it was felt that many of the older employes would be much interested in a reproduction of the first page of the first issue with which they were familiar.

PORTION OF FIRST AID STATION—ALBANY STREET SHOPS

The company maintains three First Aid Stations, similar to the one above, located at the Albany Street Shops, 439 Albany street, Boston; Everett Shops, and the Sullivan Square Shops, 20 Arlington avenue, Charlestown.

These stations are supervised and visited daily by Dr. Walter C. Feeley, 859 Massachusetts avenue, Cambridge, who is now assistant surgeon at the Cambridge Municipal Hospital. They are under the direct charge of Miss Elizabeth Peden, head nurse, Albany Street Shops. Miss Margaret M. Griffen is at the Bartlett Street Shops, and Miss Estelle Maloney is at the Sullivan Square Shops. Miss Peden, Miss Griffen and Miss Maloney are all registered nurses and were chosen because of their long experience in their profession, their ability to treat injuries scientifically; they are possessed of sympathetic tendencies, patience and kindness which tend to make the treatment of injuries to all employes most satisfactory. These stations were first opened July 1, 1919, and thousands of treatments have been rendered to injured employes of the Boston Elevated Railway since that time. During the year ending January 1, 1923, there were 3217 treatments rendered at the Albany Street First Aid Station, 1783 at the Bartlett Street First Aid Station, and 4290 at the Sullivan Square First Aid Station. These stations are open from 8:00 A. M. to 5:00 P. M. week-days and Saturdays from 8:00 A. M. to 12:00 noon. In most cases employes will receive treatment sooner at these stations than at any other place, even though it may be necessary to ride a short distance to the nearest station to your place of employment. The nearest doctor may be out of his office or it may be necessary to wait for a considerable time at a hospital.

While these stations are located in the shops it is the intention that all employes should have the privilege of treatments at the nearest First Aid Station.

THE SEASON'S GREETING

The record of our railway during the current year has been such as to permit each and every one of our organization to feel glad that he or she has participated in it.

Record traffic and steady improvement in the character of service rendered indicates the right kind of progress.

In wishing our organization a Happy New Year there seems to be a confident feeling that 1924 holds for us an even better record.

INFORMATION AND REPORT CLERK AND PARK STREET INFORMATION BOOTH

In the effort to assist patrons, attention has been directed to the fact that by calling "Information, Back Bay 1800" at any time, day or night, they may obtain information about car or train service.

In addition, an information booth has been installed at Park Street Subway southbound platform where detailed information is available and where attendants are on duty to answer questions pertaining to the service. From 7 A. M. until 11 P. M. inquiries average daily approximately 1800 and have been as high as 170 in a single hour.

> Many accidents are caused by sending the body out to work and the mind out to play.
>
> —*"The Safety Valve"*

BOSTON IN MOTION

The Trustees have had a one-reel film entitled "Boston in Motion" produced by the National Motion Picture Bureau and it is now being displayed at moving-picture theatres in the district served by the Elevated.

It is an educational film which discloses in an interesting way some of the difficulties surrounding street railway operation, in the hope that the car rider, appreciating these difficulties, will be disposed to co-operate and thus improve the character of the service.

CONTINUED GOOD WORK

The Boston Globe published the following letter recently written to them:

"A daily passenger with some lameness, I want to express my appreciation of the courtesy and kindly assistance of the conductors of the Boston Elevated Railway Company, particularly of the South Boston Division, and to wish each one of them a Merry Christmas and a Happy New Year."

One of the trial attorneys recently wrote the following commendation of a conductor who testified in a case he had on trial:

"The conductor's manner on the witness stand was as near perfection as one can get. It was restrained in manner and tone, it was direct in its response, and made a decided impression on the jury. The result of the case was a substantial win for the company.

"I feel that you ought to know when your men are under fire that some of them at least measure up to this high standing of intelligence and correct deportment in Court."

These are but a few of the constant stream of commendations which are now becoming more and more frequent. Keep up the spirit of co-operation.

RAIN OR SNOW

For the first 26 days of December the rainfall has amounted to 4.12 inches. This would have resulted in a fall of over 40 inches if it had been snow.

The average cost per inch of snowfall for the last 20 years amounted to $2,573 per inch which means that by the vagaries of the weather we have avoided a possible expense of $102,920.

INTERESTING FACTS

There are 344,303 American Indians in this country today, an increase during the last ten years of 13,664. The value of individual and tribal property owned is $1,010,870,519, and the attendance at the Government schools is 24,145.

NOVEMBER OPERATION

	1923	1922
Excess of revenue over cost of service	$83,410.50	$175,563.07
Total revenue passengers	32,899,951	31,488,700
Revenue passengers per mile operated	7.102	7.394
Per cent. 5c fare passengers	26.32	23.96
Miles operated	4,632,331	4,258,639
Trips operated	550,340	513,707
Average rate of fare	8.684	8.302
Employes complained of by car riders	91	128
D. C. KW output—gross for month	22,356,895	21,466,865
Maximum KW hour load	75,540	71,730
Tons of coal consumed	21,336	23,610
Lbs. of coal burned per KW D.C. at cars	2.138	2.464

December 31, 1923

EDWARD DANA, *General Manager.*

9388.744bA5

PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

CO-OPERATION

SERVICE
FOR THE
SAFE CAR RIDERS SURE
SATISFACTORY

Vol. 3 JANUARY, 1924 No. 1

CURRENT AFFAIRS COMPLIMENTARY

The Chamber of Commerce weekly, "Current Affairs," commented at length upon the Park Street Information Booth in its issue of December 31, 1923, as follows:

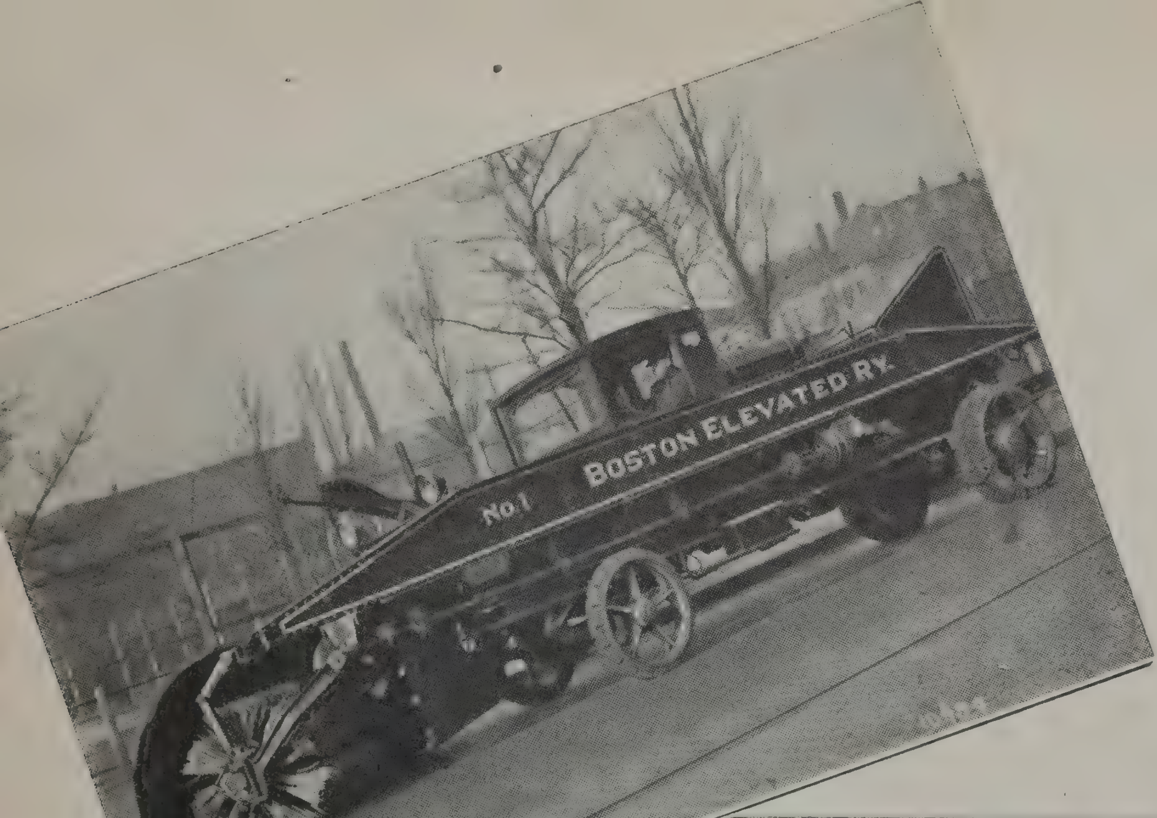
"The yearning of the public for authoritative and accurate information was again eloquently demonstrated in the experience of the Boston Elevated in opening recently an information booth for its own passengers in the Park Street Subway Station."

"Information is the one commodity which they cannot buy with money: it is the most eagerly sought commodity that can be obtained for them and it is the most inexpensive gift that can be made by any community."

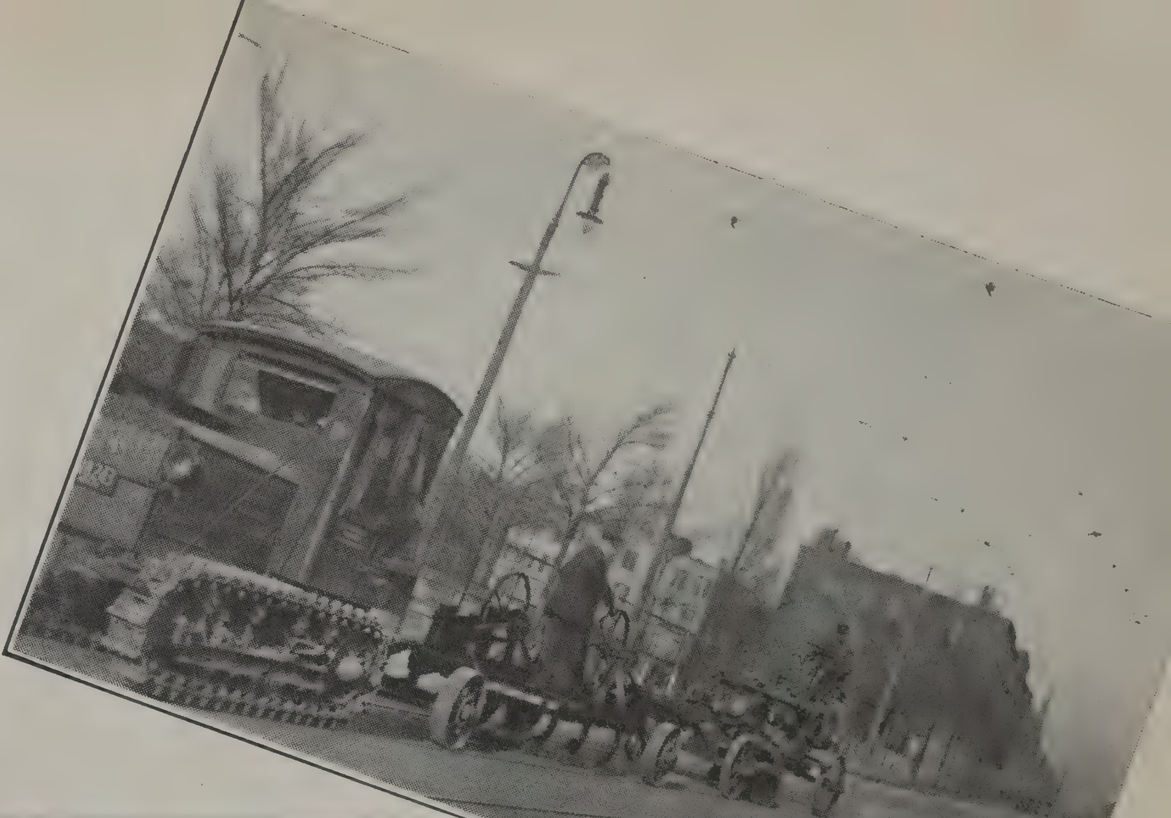
THE NEEDED THING

By Margaret E. Sangster

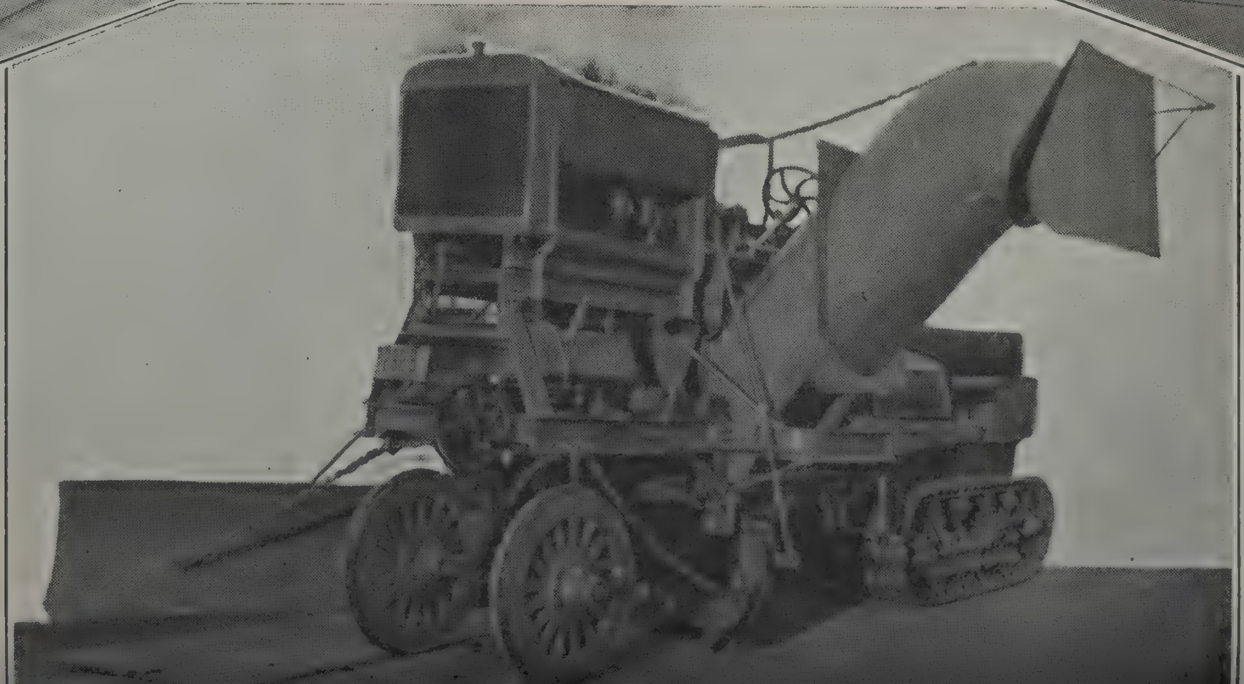
To do the needed thing when all about you
  Are standing by and letting moments pass—
To see more clearly than the ones who doubt you,
  And not to vision darkly, through a glass.
To help the man who suffers by the wayside,
  To do it swiftly, when he meets with pain;
To move into the gap which is left vacant,
  To do the needed thing, nor think of gain.
To do the needed thing when folk are seeking,
  But very blindly, for a thing to do—
To practise what you preach, when you are speaking,
  To take the task in hand that comes to you.
To reach ahead, and not to stumble forward,
  To seek, ere opportunity flits by,
To do the needed thing when all about you
  Are wondering and letting moments fly.



Fox Rotary Snow Sweeper



Killifer Ice Breaker



OUR NEW SNOW FIGHTING EQUIPMENT

The Fox Rotary Snow Sweeper is an independent outfit mounted on a truck chassis. The broom is operated by a 70 horsepower independent gasoline motor which revolves at the rate of 400 revolutions per minute. The sweeper will clear a path 8 ft. in width up to 10 inches in depth at a truck speed of 10 to 12 miles per hour.

The Stadig Rotary Snow Loader consists of a four-bladed spiral cutter 34 in. in diameter by 18 in. in height, revolving at 1000 revolutions per minute, driven by a 60 horsepower gasoline motor. The cutter revolving at a high speed creates a strong current of air, which, added to the centrifugal force of the spiral blades, shoots the snow upward with great velocity out through the chute on the side of the loader.

The scraper is provided in an extension so that the machine can be set to clear a roadway from 6 to 10 feet. The machine is propelled with a caterpillar tractor. A test of this machine shows that it can handle 3½ tons of snow in 2½ minutes and this was placed in a cart of 7 cubic yards capacity. The same cart loaded by hand contained 1 ton of snow and required 6 shovellers 25 minutes to load. In other words, this rotary loader loaded more than three times the quantity of snow in less than one-tenth the time required by hand.

The Killifer Ice Breaker is comprised of a tractor, an ice breaker and a road machine and is designed with its projecting teeth to break up high ice.

These machines are an effective addition to our snow fighting equipment and much is expected of them.

THE RESERVE FUND

On July 1, 1923, a payment of $1,114,557.82 was made to the cities and towns and the Reserve Fund required by law was intact.

The cost of service exceeded revenue in

July	$285,004.74
August	319,516.56
September	251,688.05
	$856,209.35

The revenue exceeded the cost of service in

October	$ 15,830.84
November	83,410.50
December	376,616.21
	$475,857.55

Profit & loss, delayed items.	7,393.09

The Reserve Fund which was intact on July 1st has therefore been reduced from $1,000,000 required by law to $627,041.29; or, in other words, at the present moment we are short $372,958.71 in the Reserve Fund.

As compared with January 1st, 1923, the Reserve Fund at that time was intact and $339,521.34 was available toward the repayment to the cities and towns on July 1st, 1923.

THE ENERGY OF FOOD

Regarded as a material system for the development and regulation of energy, a living animal organism is in many ways a mechanical marvel. Like other machines it requires fuel, and as in the case of other machines, its fuel is mostly carbon; but the carbon of food, not the carbon of coal or of oil. Now the carbon of food is the very same carbon which the red rays of the sun tear from the carbon dioxide of the atmosphere in the laboratory of the green-leaf. The wrench of the sun sets the carbon vibrating with new energy, and when it is afterwards built into starch the energy is latent there, and is delivered to the animal which eats the starch (or fat or sugar or protein constructed out of the starch), and is manifested as actual animal energy as soon as the food is oxidised in the animal's tissues, just as coal gives off its energy (as heat) when it is oxidised in a furnace. (When another element combines with oxygen, as carbon in particular so readily does, we speak of it as being oxidised; the process is one of combustion, in which heat and energy are liberated.) If we put glowing carbon into a jar of oxygen it oxidises quickly and burns fiercely, while, if we put the carbon of our food in contact with the oxygen carried by our red blood corpuscles, it oxidises slowly and burns quietly, heating the body usually only to 98.4°F., and manifesting itself not only in heat but in chemical, mechanical and electrical energy. But in each case the process is essentially a freeing of solar energy previously imparted to the carbon. Our bodies, therefore, are sun machines, worked by the red rays of a star 93 million miles away, radiated it may be a million years ago. When Gimbernat, for instance, consumed soup made of a mastodon's teeth, he put into his heartbeat the carbon of the food crushed by the monster's molars hundreds of thousands of years ago, and the carbon had probably been energised in some tree-fern by the tropical sunlight of that prehistoric era. Gimbernat really drank in his soup not only gelatin from monstrous molars, but also starch from prehistoric trees and the red light of a prehistoric sun. We are not all so prehistoric in our meals as that, but every man lives and moves by virtue of the red light of the sun which he consumes with his porridge, or potatoes or beefsteak, or bread and butter. We cannot wink an eyelid without liberating the energy of these red rays from our culinary carbon. — "Outline of Science" by Arthur Thompson.

TAKE THE SAFE COURSE

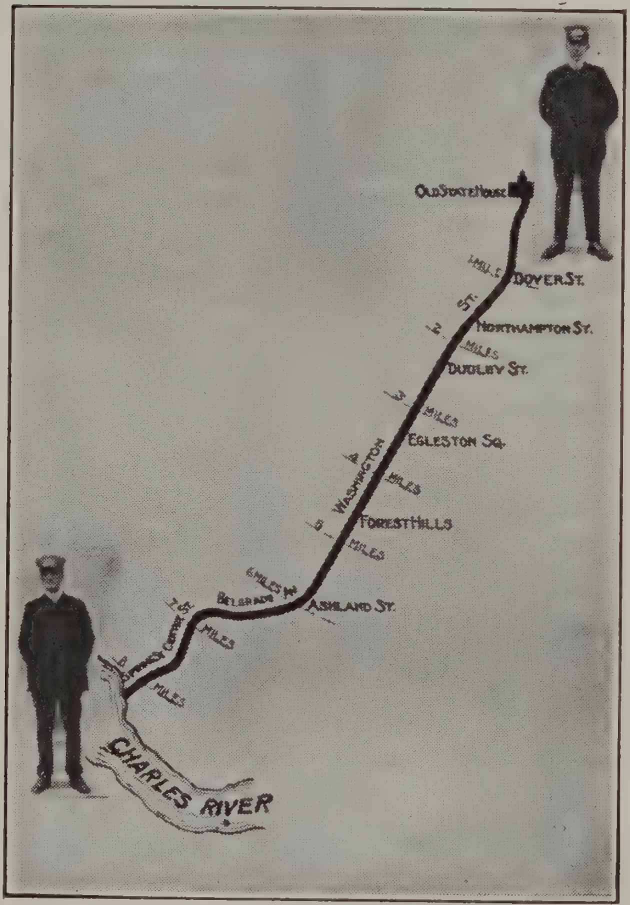
Accident prevention is tested and tried common horse sense. It's right, it's fair, it's honorable, it's economical beyond question, it's humanitarian, and what's more it is on the square.—*National Safety News.*

PENSION LIST

During the year 1923 there was paid to employes on the pension list $114,505.29. Fifty-seven men were added to the list and death called thirty from the list. There are 243 men on the pension roll at the present time.

A LONG LINE

If all the employes of the Elevated were placed in single army file the cut shows that one end would start at the Old State House and the other end would reach to the Charles River in West Roxbury 8½ miles away.



ACCIDENT WITNESSES

The average number of witnesses per accident in December was 3.39. This, of course, includes accidents where it was possible to get a large number of witnesses as well as the accidents where there was no witness whatever to the accident. If every effort is put forth to secure all possible witnesses this average will be higher.

When it is a case of your word against the word of another;

When your honesty is disputed and your reputation (and perhaps your job) depends upon your ability to prove that you are telling the truth;

When you are confronted in court with witnesses who testify and a keen lawyer who tries to prove that you are lying;

When, for the purpose of obtaining money, people attempt to prove that you are responsible for the loss of life or injury to persons;

When you know that you are telling the truth and the charges against you are false;

How much would you give for a witness or for a number of witnesses to prove that you are telling the truth, that you are honest and that you are blameless?

No one in the service of this railway needs further instruction as to what he should do or how he should do it in the matter of procuring witnesses. He has been instructed, so that it is not a lack of knowledge but a failure to appreciate the importance of procuring witnesses if he finds himself in the position above described, when his word alone is all that stands between discredit for himself and loss for his employers.

In case of an accident, get witnesses—*and then more witnesses;*

In case of an accident, however slight, get witnesses—*and then more witnesses.*

You can never know in advance how much you may need them some day.

Luck may live with you for years or it may desert you today. Don't count on it.

—*The Safety Valve.*

Children are instinctive like minnows—attracted by bright colors and moving things; watch out for and protect them.

—*The Safety Valve.*

COMPARATIVE DIVISION OF RECEIPTS AND EXPENDITURES FOR YEAR ENDING DECEMBER 31

	1923	1922	1921	1920	1919	1918	1917
Total receipts	$34,098,964.62	$32,699,176.37	$33,277,025.53	$34,031,636.44	$29,498,582.82	$21,062,692.82	$19,818,407.01
Operating expenses:							
Wages	16,224,275.94	14,772,340.42	15,563,255.53	17,216,445.20	15,539,105.59	11,007,362.35	8,988,580.99
Material and supplies	3,236,805.32	2,903,650.98	3,093,934.69	3,310,858.94	3,640,065.60	3,248,317.15	2,269,099.61
Injuries and damages	822,775.24	555,355.59	518,249.02	640,165.04	701,907.28	792,783,96	834,981.76
Depreciation	2,004,000.00	2,004,000.00	2,004,000.00	2,004,000.00	2,004,000.00	1,184,670.00	320,000.00
Fuel	1,842,396.91	1,853,111.76	1,663,617.75	2,597,652.93	1,815,260.94	1,762,963.86	1,134,461.92
Total operating expenses	$24,130,253.41	22,088,458.75	22,843,056.99	25,769,122.11	23,700,339.41	17,996,097.32	13,547,124.28
Taxes	1,688,139.91	1,587,186.83	1,546,758.15	1,142,987.28	1,045,502.36	917,515.49	884,623.01
Rent of leased roads (incl. dividend rental under Chap. 159, Acts of 1918)	3,185,577.67	3,646,595.75	4,203,061.72	4,102,230.36	4,002,656.93	3,233,546.13	3,324,562.16
Subway and tunnel rents	2,026,936.52	2,008,414.25	1,963,737.78	1,790,432.30	1,516,047.01	1,235,974.55	993,498.81
Interest on bonds and notes	2,316,026.54	1,891,315.57	1,494,258.43	1,514,963.98	1,555,790.06	1,302,157.14	1,174,572.22
Miscellaneous items	70,247.65	65,016.14	54,707.59	59,067.65	60,346.93	22,343.21	12,299.67
Total cost of service	$33,417,181.70	31,286,987.29	32,105,580.66	34,378,803.68	31,880,682.70	24,707,633.84	19,936,680.15
Loss for year				347,167.24	2,382,099.88	3,644,941.02	118,273.14
Gain for year	681,782.92	1,412,189.08	1,171,444.87				

THE RIGHT AND THE WRONG WAY

"The handling of the car by the motorman and the treatment of the passengers by the conductor play a most important part in so satisfying patrons as to develop future business. The motorman who brings his car to a sudden stop, to the discomfort of all his passengers, does not instill a desire upon their part to use the street cars; nor does the conductor who greets the passenger with a scowl, answers questions with a short, abrupt snarl, promote the selling of rides to those passengers in the future. On the other hand, the motorman who brings his car to a smooth, easy stop; who accelerates gradually in starting and whose every action insures the passenger that he is in the hands of a safe, careful operator, helps materially in completing a satisfactory sales transaction. Likewise, the conductor who greets his passenger with a smile, answers questions willingly, pleasantly and in a businesslike manner, and who is willing at all times to assist in every way possible in making his passengers comfortable, surely promotes an inclination on the part of the patron frequently and continually to buy the service."

Reduce It In 1924

During the year 1923 263 cars were repaired due to collisions.

The actual cost was $20,533.30 besides the loss of use of car which would add an approximate cost of $26,300.00.

Did you ever stop to think what real co-operation would do to this figure in the interest of the car rider?

COURTESY ALWAYS

During the year 1923 there were 102 letters received at the General Manager's office commending the manner in which car service employes performed their duty.

THE NEW YEAR

"1923 is over. Sweet and solemn are the cadences of the dying year. It seems but yesterday that the "Happy New Year" of '23 was upon our lips—but now grown old and slipped into the irrevocable past. Nothing can be altered; nothing can be changed. Its record is as secure as the doings of Egypt's 'Tuts.' It has spent its life on earth for good or ill and its footprints are eternal. Nothing there that even the Magician's wand can change by one hair's breath. Well—let it go. So many people will not let it go, and that is why, for them, the New Year brings no more of promise than the the old. Let it go and then go on."—*From "Man to Man"—Arthur C. Archibald in The Automobilist.*

He who would laugh last must believe in Safety First.

DECEMBER OPERATION

	1923	1922
Revenue exceeded cost of service......	$374,464.85	$301,797.19
Ratio operating expense to operating revenue	62.59%	64.65%
Revenue per car mile operated...........	64.15c	68.41c
Revenue per car hour (A. E. R. A. Standard)	5.85	
Revenue passengers............................	34,728,705	33,461,827
% 5c fare passengers.........................	26.25	24.15
Average fare per revenue passenger..	8.687c	8.793c
Revenue passengers per car mile operated	7.256	7.650
Car miles operated..............................	4,793,372	4,382.826
Trips operated....................................	571,024	527,772
Employes complained of by car riders	100	127
Average number of witnesses per accident	3.39	3.29
D.C. K.W. output gross for month....	25,373,545	26,803,920
Maximum K.W. hour load.................	82,965	78,755
Tons of coal consumed.........................	24,223	30,081
Lbs. of coal burned per K.W. D.C. at cars	2.138	2.514

January 31, 1924

EDWARD DANA, *General Manager.*

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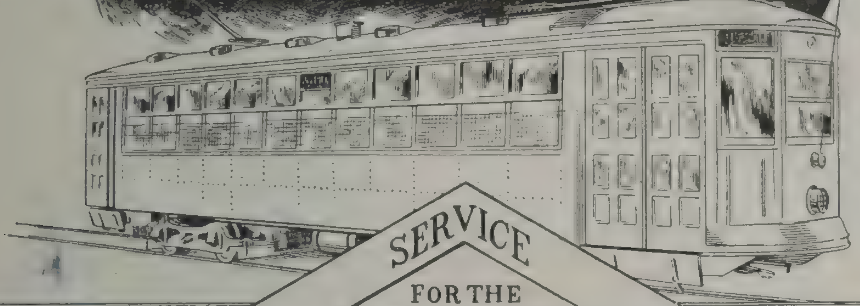
Vol. 3 FEBRUARY, 1924 No. 2

PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

CO-OPERATION



SERVICE

SAFE FOR THE CAR RIDERS SURE

SATISFACTORY

COURTESY IN 1923

A year ago we called attention to the constantly improving record in regard to courteous treatment of car riders. We expressed the hope that the year 1923 would still further improve that record. It is gratifying to note that the record in 1923 was improved.

Total Complaints Against Employes for Discourteous Treatment

Year 1919	1,595
1920	1,529
1921	1,421
1922	1,357
1923	1,242

Let us leave no stone unturned to continue the gradual elimination of complaints by car riders and be known as the road of courtesy.

There were also 102 commendations received at the company's offices which indicates appreciation on the part of car riders of work especially well done.

FEBRUARY 18, 1899

A recent news item called attention to the fact that upon February 18, 1899, President McKinley and members of his cabinet spent the day in Boston, attended the Grand Army Convention in Tremont Temple, addressed the Legislature in joint convention at the State House, and visited the Boston Subway, entering at Park street, riding to the North Station and back to the Public Garden exit. That was 25 years ago, and the cars had been removed from Tremont street and operated via the Tremont St. Subway to the North Station on Sept. 1, 1897, in the first subway for street cars in this country.

WINTER ONLY 6 MILES AWAY AT ALL TIMES

Did you ever stop to think about the atmosphere which envelopes the surface of the earth

You can stand in the Custom House tower and look over our city and easily see points reached by the cars of this railway six miles away.

You can also look directly up toward the clouds and visualize a point that same distance away.

But few people realize that just six miles above us both winter and summer the temperature is 60° F. below zero.

Therefore, on the hottest day in summer, when the ground temperature is hovering around the 100° mark, and the sun's heat seems oppressive, real winter, 60° below zero, is only six miles above us.

SAFETY PROVERBS

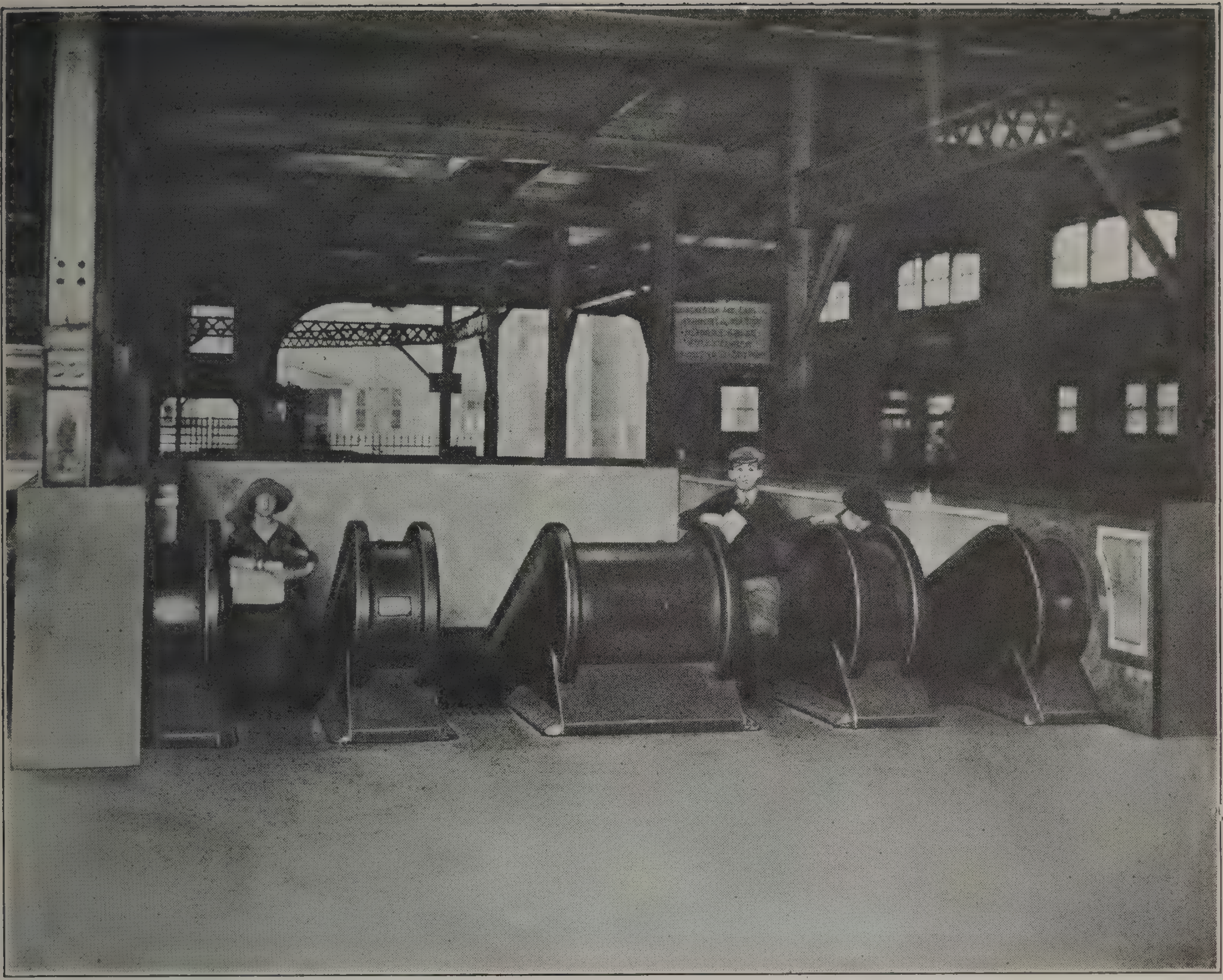
A crack in your chimney is a sure sign that you are going to move.

It is worse luck to look into a dark closet with a match than to see the new moon over your left shoulder.

When the wind moans it is extremely bad luck to burn trash near the house.

A quart of gasoline will cause an automobile to move three miles. A similar amount used in household cleaning may cause three auto fire trucks and an ambulance to run a similar distance.

Fires occur in an American house every four minutes or 359 every day and night. Fires of all kinds burned 15,000 people to death last year.—*Mass. Safety Council Bulletin.*



ESCALATORS

Prior to 1900 the escalator was unknown to the public and was first shown at the Paris Exhibition. Its success is due to the fact, as it is constantly moving, persons may step upon it at any moment and be carried upward or downward at a moderate rate of speed. As there is no time lost in loading, standing, stopping or unloading, large crowds can be handled with comfort and dispatch.

There are two types known as the step and cleat types. The step type results in a perfect staircase. The cleat type is an endless moving platform formed of hard wood cleats. Both types have hand rails on each side moving at the same rate of speed.

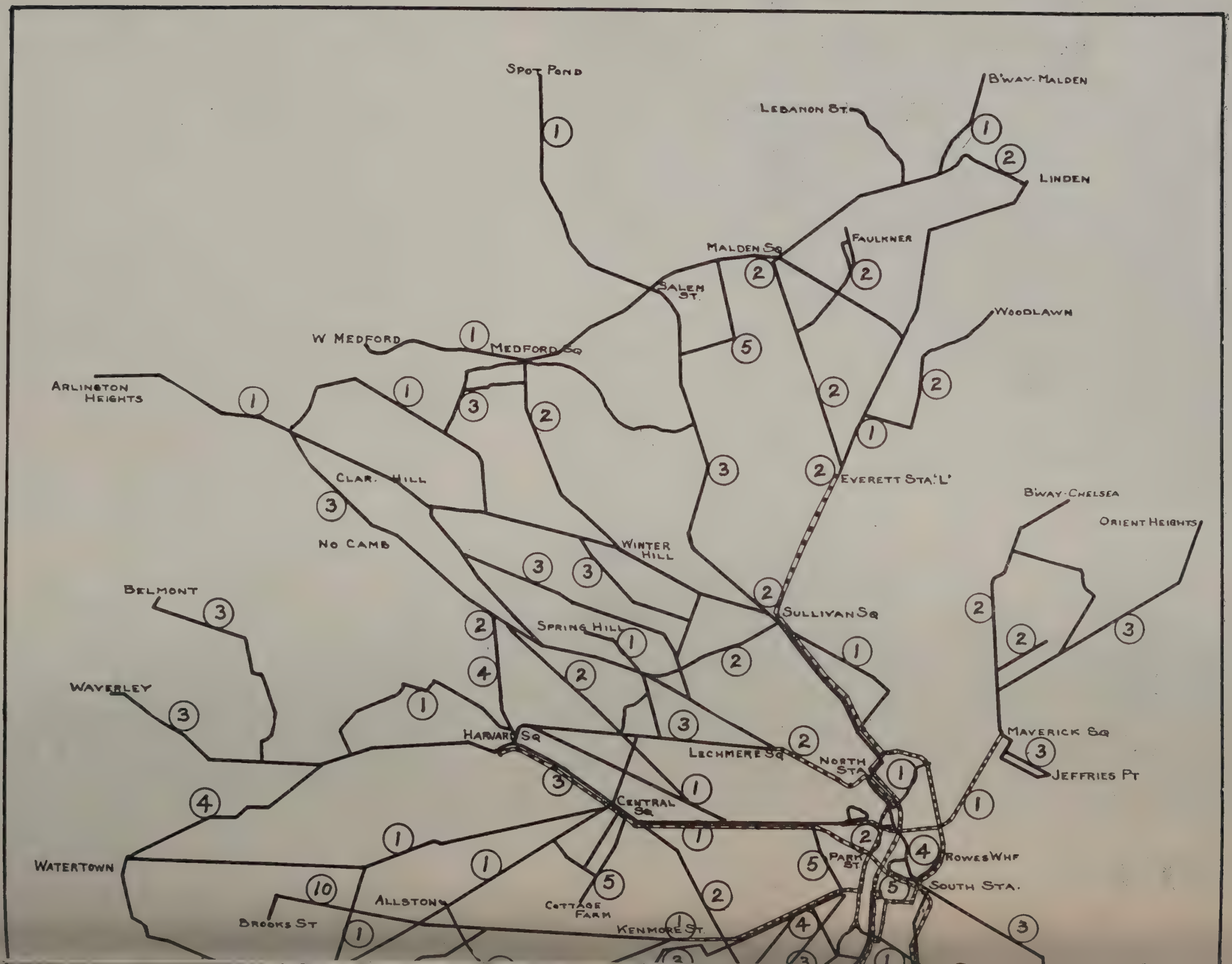
The first installation of escalators introduced in the transportation system in Boston was at the State Street Station of the Washington Street Tunnel in 1908.

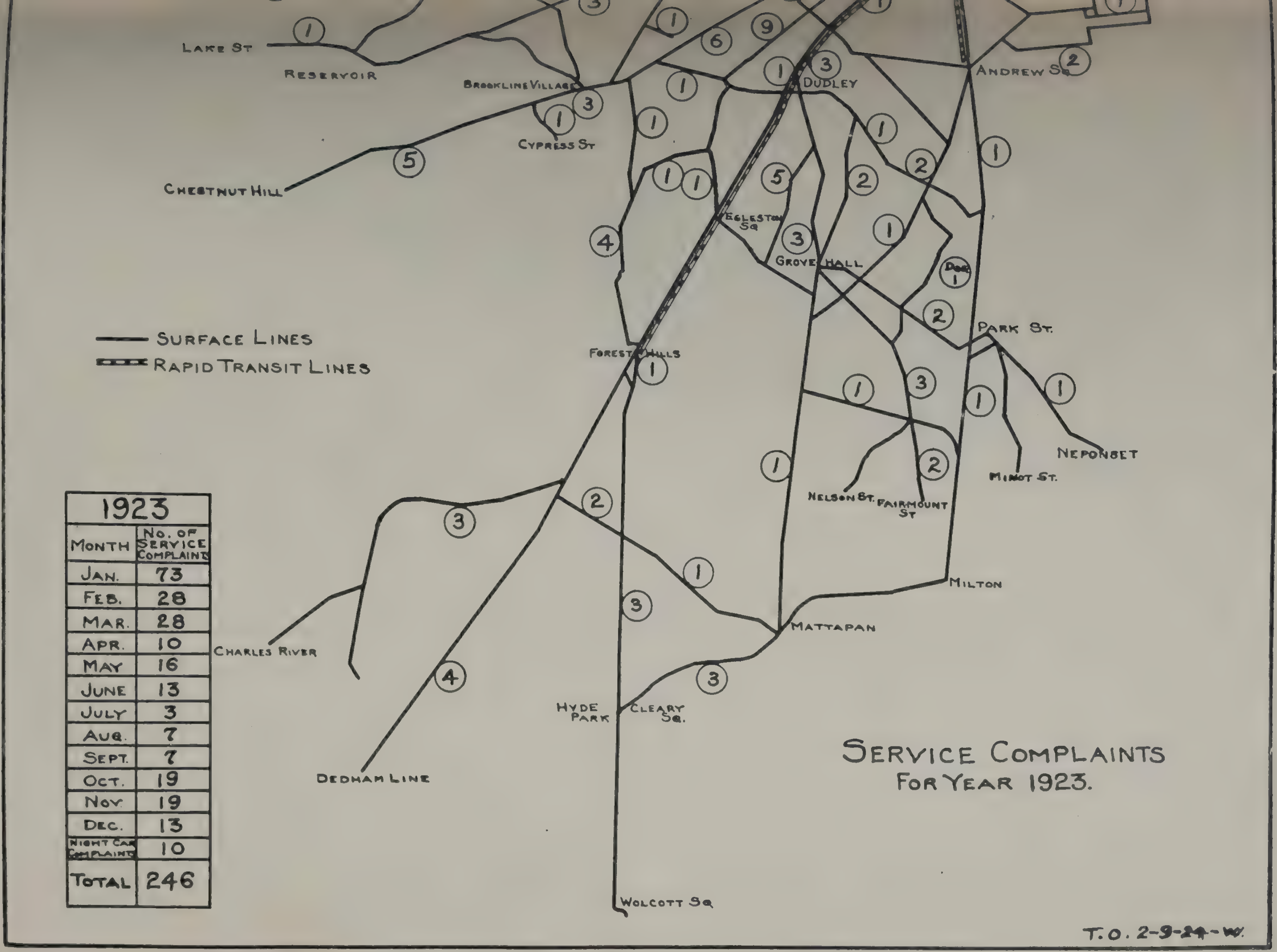
Today there are 35 escalators on the Boston Elevated system.

The average distance the passenger is raised is 25 feet, and the maximum 44 feet at South Station Under.

All of these escalators travel at a rate of 90 feet per minute, and the total capacity at rush hours is 140,000 passengers.

The present investment in escalators which materially assists in the comfort of the traveling public is over half a million dollars.


Spot Pond
B'way-Malden
Lebanon St.
Linden
Malden Sq
Faulkner
Salem St.
Woodlawn
W Medford
Medford Sq
Arlington Heights
Everett Sta. 'L'
Clar. Hill
B'way-Chelsea
Orient Heights
No Camb
Winter Hill
Belmont
Sullivan Sq
Spring Hill
Waverley
Harvard Sq
Maverick Sq
Lechmere Sq
North Sta.
Jeffries Pt
Central Sq
Watertown
Rowes Whf
Park St.
South Sta.
Allston
Cottage Farm
Brooks St
Kenmore St.



1923	
Month	No. of Service Complaints
Jan.	73
Feb.	28
Mar.	28
Apr.	10
May	16
June	13
July	3
Aug.	7
Sept.	7
Oct.	19
Nov.	19
Dec.	13
Night Car Complaints	10
Total	246

Map showing location and number of complaints regarding service

RADIO VOICE AMPLIFICATION

It has been carefully estimated that the power of the human voice, measured in terms of watts, represents one one-hundred-millionth of a watt. The power of an average broadcasting station, measured in the same way, is equal to approximately 746 watts, or one horse power. This gives you the comparison between the human voice and the broadcasting station, or voice horse power. The human voice can ordinarily only travel a distance of several hundred feet, but when that voice is magnified by radio through the one horsepower station, it can travel with a power that may carry it several thousand miles.

To broadcast, therefore, the volume of that human voice has to be amplified or increased 50,000,000,000 times. In other words, if it were physically possible to get all the people of the world to utter a sound, sing a song or make an outcry simultaneously, the voice produced would represent only one-thirtieth of the power of the average broadcasting station, as the world's entire population represents but 1,500,000,000 voices, and the average broadcasting station speaks with the power of 50,000,000,000 voices.—*Boston City Club Bulletin, February, 1924.*

ANOTHER RECORD

1575 uniformed men did not miss once in 1922.

1721 uniformed men did not miss once in 1923.

Credit goes to these real railroad men who can establish such a record. Those who joined the ranks of the non-missers in 1923 are in worthy company.

This is the record of those men who did not miss once. There were others very close who missed one or more times. Such a record stamps the habitual misser as somewhat out of step and he should not be surprised when it leads to his downfall.

WASHINGTON

America has furnished to the world the character of Washington! And if our American institutions had done nothing else, that alone would have entitled them to the respect of mankind.— *Daniel Webster, Completion of Bunker Hill Monument, June 17, 1843. Vol. 1, P. 105.*

LINCOLN

"Let us have faith that Right makes Might, and in that faith let us to the end dare to do our duty as we understand it."—*Abraham Lincoln—Address, New York City, February 21, 1859.*

INTERESTING NEW ENGLAND FACTS

	United States	New England	%
Area	3,026,789 sq. m.	61,976 sq. m.	2.08
Population	105,683,108	7,400,902	7.01
Population per square mile	35	119	
Population engaged in industry	8.6%	18.2%	
Bank Savings per capita	$62.83	$6161.14	
Per capita use of electricity K.W.H.	501	598	

As the Bowlers Stand Today

	Won	Lost	Pinfall
Employment Dept.	62	18	27,827
Power Dept.	55	25	27,687
Rapid Transit Lines	55	25	27,561
Div. 1	53	27	27,563
Gen. Manager's Office	52	28	26,789
Div. 4	48	32	27,416
Div. 2	43	37	27,066
Repairmen	41	39	26,839
Albany St. Shops	39	41	26,194
Auditor's Office	36	44	26,657
Div. 3	29	51	25,556
Instruction School	23	57	26,361
Lenox Street	22	58	25,932
Claim Dept.	14	66	23,122

The best angle from which to approach any problem is the try-angle.—*Kreolite News.*

ECONOMIC FACTS

"The three hundred years of American national history comprise an era which may well challenge the attention of every student."

"A survey of the vast material progress of America in its short national history may well occasion the profound American pride of accomplishment."

"A nation that in three hundred years of national history has created the vast aggregate of three hundred billion of national wealth, possesses vast potentiality of human service. When we find its nearest rival, the British Empire, with two thousand years of creative opportunity and with its present possessions circling the globe, attaining an aggregate wealth of only one hundred and seventy billion, the imagination is challenged, indeed, to a search for the reason of America's miracle development."

"Influenced by this political philosophy, running parallel with it, and justified by its accomplishment under test, runs the American industrial ideal by which a premium is put on human effort, through the enlargement of its production, by mechanical aids. The typical American industrial theory of mass production, justified by industry itself only on the claim of economy of operation, has nevertheless proved, in its history, to be a most potent service in advancing living standards."

"Further it may be accurately calculated that the wheat crop of America today requires the equivalent of seven million working days, while if that crop were produced today on the methods used before the invention of the harvester and its succeeding devices, it would require one hundred and thirty million total working days instead. This reduction, in three generations, of human effort devoted to a single crop, releasing one hundred and twenty-three million working days to other production, typifies the constant progress of American industry. There are countries in the world, competitors with America in the production of cereals for sale in Europe's import markets, still producing their cereals with the hand methods of three generations ago."

"A generation ago, a single horse, with a single plow, guided by a single man, plowed a single acre in a single day. Today the American tractor, with a single man, will plow eight to ten acres a single day."

"In automobile manufacturing, in the short space of ten years, the annual output, per worker, has risen from one and one-half cars to over four. What this has meant to America in earning power, and in social enjoyment, is beyond human ability to tabulate. What it has meant in economy of production, and thus in enlarging the circle of users, is stated most graphically in the fact that one single manufacturer in the United States produces in four months more cars than have accumulated in twenty years in our nearest rival, Great Britain."

"Our industrial history makes it manifest that the workers thus released through the substitution of mechanical devices and labor-saving aids are not consigned to unemployment, with the social injury of idleness and lack of earnings and savings, but are released instead to the constantly expanding old and new industries, and thus constantly swelling the production stream of articles of common sense."

"It is manifest that the standard of living can only be advanced and maintained by the creation of more and more articles for division among American homes. It is manifest that the American process of mass production, the constantly expanding output of articles of common use, does, of itself, directly tend to expand the average standard of possession. It is manifest that this increasing volume must press into more and more homes, facilitated by the economies of costs which mass production itself secures, and aided in its distribution by more widely distributed buying power which enlarged competition for workers itself assures."

"In the twenty years between the census dates of 1900 and 1920 these comparisons occurred:

> "Our population increased forty per cent.
>
> "The volume of food production increased thirty-eight per cent. with the assurance of adequate home supplies which that suggests.
>
> "The volume of mine production increased 128 per cent., showing that in metals and iron there was adequate assurance for the necessary supplies of manufacturing industry.
>
> "And in the same twenty years the volume of factory output rose ninety-five per cent., or almost doubled.

"If you extend the increasing annual output rising between 1900 and 1920 at almost double, you arrive at a rough calculation that the factory output of articles of common use had, in that twenty years, mounted to one thousand per cent. above the continued level of 1900 on which it started. If one proceeds to eliminate from this vast addition those articles which may have been currently consumed, such as food and clothing, there is such a residue plainly left as to lead to the unavoidable conviction that in 1920 the average home of America possessed three times the articles of common use which the average home of 1900 possessed. You may test this roughly in your own observation by recalling how recently have come into general use bathrooms and plumbing, telephones and phonographs, electrical devices and automobiles and a thousand other things."—Julius H. Barnes, President, United States Chamber of Commerce. Commencement Address, University of Pittsburgh, Jan. 13, 1923.

SAFETY ALWAYS

(Tune—Swanee River)

O friends, we have a noble slogan, shout it today,
Fair bond that keeps the hearts united and safely every way,
'Tis one to help a friend and brother keep in the fight,
It guards him in the hours of labor and in the old home at night.

Let "Safety Always" be our watchword wherever we go
And rally to our good old slogan so all the world may know,
United may the hosts of labor, land, sea and air
Have Safety morning, noon and night-time and safety ev'rywhere.
What if it be a home that's humble 'tis home to you,
'Tis ever best to keep from danger self and the loved ones too,
O may the mothers and the children all join and say,
"We love to shout the grand old slogan, 'Safety, Safety, ev'ry day.' "

Chorus

Raise the slogan, "Safety Always"
Over land and sea,
O let us make the homes be happy
Children shout their A-B-C.

Written by employe of Boston Elevated.

Sung at Mass. Safety Council Meeting.

JANUARY OPERATION

	1924	1923
Revenue exceeded cost of service......	$125,758.50	$96,725.10
Ratio operating expense to operating revenue	70.17%	71.61%
Revenue per car mile operated........	63.14c	69.06c
Revenue per car hour (A. E. R. A. Standard)	5.91	
Revenue passengers..............................	34,416,978	33,368,466
% 5c fare passengers.........................	27.13	25.03
Average fare per revenue passenger	8.643c	8.748c
Revenue passengers per car mile operated	7.161	7.726
Car miles operated.............................	4,806,041	4,318,910
Trips operated....................................	573,263	516,405
Employes complained of by car riders	125	144
Complaints in regard to car service....	16	71
Average number of witnesses per accident	3.52	3.40
D. C. K. W output gross for month	28,199,955	28,196,705
Maximum K.W. hour load.................	86,245	75,610
Tons of coal consumed.......................	27,326	30,331
Lbs. of coal burned per K.W. D.C. at cars	2.170	2.410

EDWARD DANA, *General Manager.*

*9388.744

Vol. 3 MARCH, 1924 No. 3

PUBLIC TRUSTEES

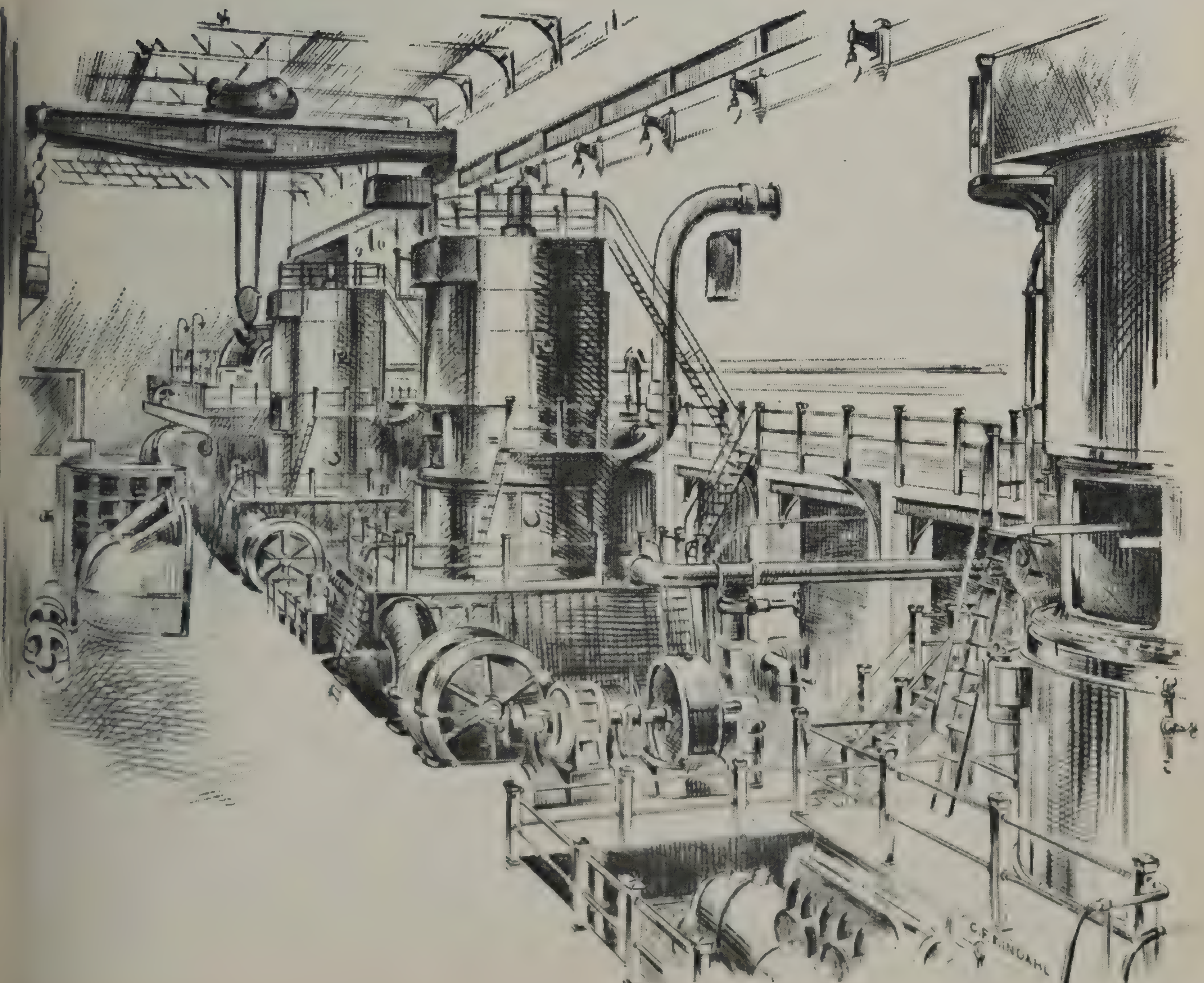
BOSTON ELEVATED RAILWAY

CO-OPERATION

SERVICE

SAFE FOR THE CAR RIDERS SURE

SATISFACTORY



SPRING

According to the calendar, officially, Spring has arrived. Nature will shortly unfold its fresh new raiment of green leaves and grasses. While the winter just passed has treated us kindly yet it is the period of short days, long nights and cold. Spring is the time to do our best and compete with nature as she unfolds her beauty. Added attention to personal appearance and uniforms is appropriate at this time.

AN EDITORIAL

The following is a reprint of an editorial which appeared in the Medford *Mercury* of March 21, 1924. It very aptly and fairly expresses the viewpoint of the patrons of the railway. Improvements can best be gained by appreciating the viewpoint of those whom we serve:

"SERVICE TO THE PUBLIC"

"We base our opinions of a big corporation upon the acts of those with whom we come in contact. The agent who deals direct with the public should, therefore, be selected with the greatest care, and should be trained, not only in the work which he is expected to do, but as to his duties with relation to the public. Probably all such persons or groups of persons are given instruction when they take a job, but no further attention is paid to the matter. It should be. There should be regular instruction, particularly if it is a corporation handling a large group of men or women who are constantly in touch with the public. It would be beneficial if a little competition was put into the instruction, having a reward given to the group against whom the smallest number of complaints were made. We believe that the Elevated is trying to do all in its power and within its financial limitations, to please the people of this city. Medford has treated the Elevated more fairly than many communities, and the Elevated is reciprocating with generous treatment. The representatives of the Elevated who are in touch with the people are the men who operate the Elevated cars. When such an employe thoughtlessly, or purposely, antagonizes a patron of the road, the patron immediately blames the whole Elevated system. The Elevated officials know that the road is being operated by and for the public under the public control act, but there are a handful of car operators who either have not heard about it or else have forgotten about it. They fail to answer inquiries courteously, fail to stop within a score of feet of a car stop, fail to wait if a patron goes to the wrong door to enter or leave a car; all small annoyances which, if repeated and multiplied, lead to ill feeling. It is commendable to see an operator caution another operator against some of these practices. Some operators realize that fault found against one member of their craft may easily be confounded as criticism of the whole craft. If all of the operators would endeavor to do away with the petty annoyances to the travelling public we doubt if there would ever be adverse criticism of the Elevated system or any other big corporation. It is the thoughtlessness of a few which brings the whole corporation into disrepute with the public."

SYSTEM MAP

A map showing the present rapid transit lines, surface lines and bus lines is printed in the middle page of this bulletin for the convenience of employes in visualizing the general extent of the system as a whole as it exists today.

THE MAN WHO WINS

If you think you are beaten, you are;
If you think you dare not, you don't;
If you'd like to win, but you think you can't,
It's almost a cinch you won't.

If you think you'll lose, you're lost,
For out in the world we find
Success begins with a fellow's will,
It's all in the state of mind.

If you think you're outclassed, you are;
You've got to think high to rise.
You've got to be sure of yourself before
You can ever win a prize.

Life's battles don't always go
To the stronger or faster man,
But soon or late the man who wins
Is the man who thinks he can.

—*Contributed by a Trainman.*

LOST

In one State Last Year $4,390,319 in Wages Lost from Industrial Accidents due to Carelessness of the Injured Person.

This would buy 415 homes with a $1,000 auto for each family!

IT PAYS TO AVOID ACCIDENTS.—*Liberty Mutual Insurance Co.*

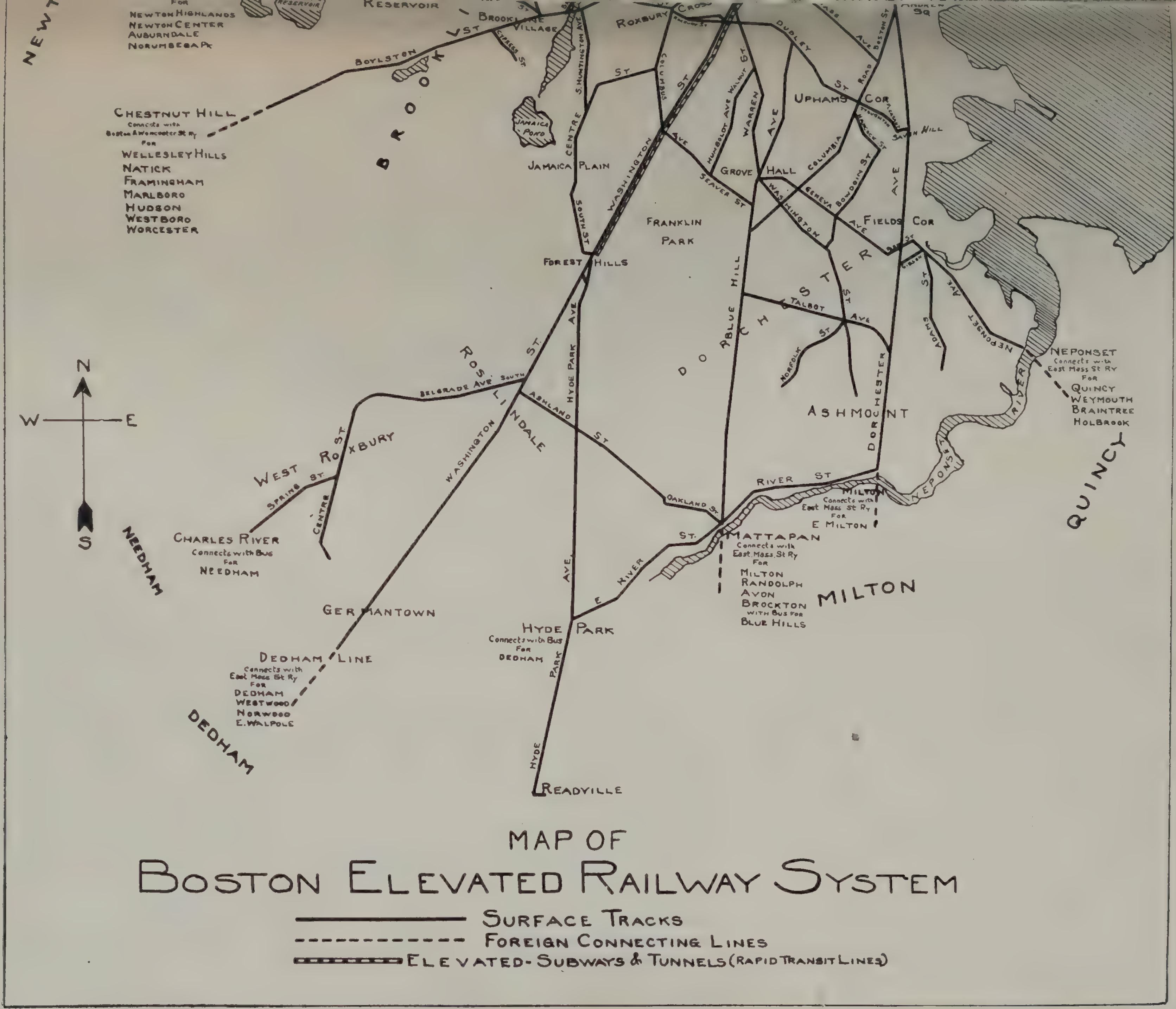
STATION FARE COLLECTION

Years ago all fares were collected upon the cars. As the rapid transit system developed conditions gradually changed and today 56% of the revenue of the system is collected at station fare boxes. This change has resulted in the growth of a force of collectors which now numbers 236, of whom 233 are women.

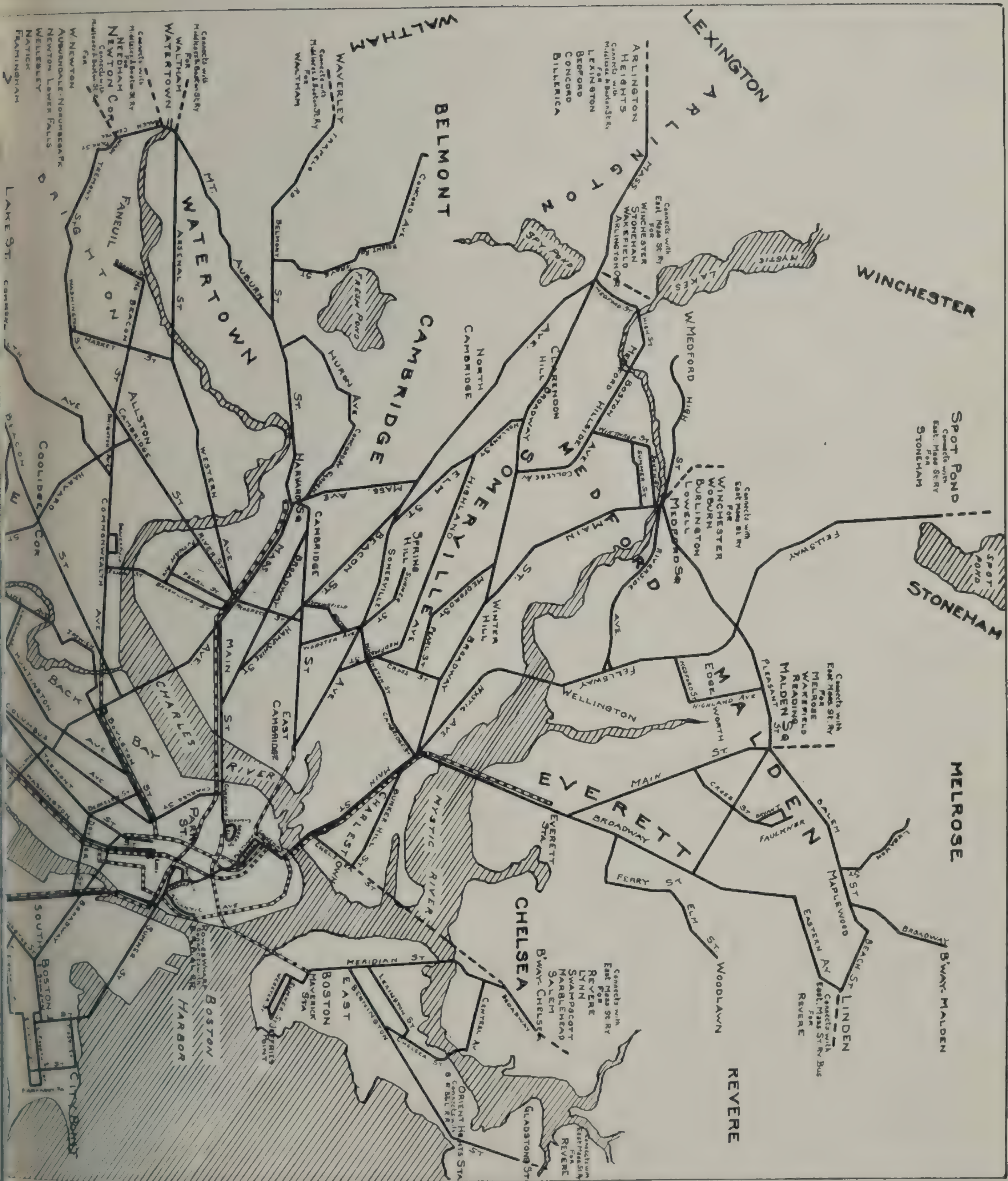
Collectors come in contact with the car riders day after day and consequently the impression which they make by quick and accurate handling of money, courtesy under all circumstances and pleasantly answering questions have a very great deal to do with the esteem in which the service as a whole is held by the car rider.

Some collectors have been 18 years in service and the average length of service of all collectors at the present time is seven years eight months. Thirty-seven cash passengers per minute were recently admitted by one collector through a single passimeter in combination with a fare box and at fare boxes attended by gatemen 100 passengers per minute can readily pass a station fare box.

The weight of the coins collected in bulk by collectors amounts to one and one-half tons. The cut shows a group of collectors at one of the meetings in the Superintendent's office, which are called frequently to have heart to heart talks on our obligations to car riders.



MAP OF
BOSTON ELEVATED RAILWAY SYSTEM


LEXINGTON
ARLINGTON
WINCHESTER
SPOT POND
STONEHAM
MELROSE
WALTHAM
BELMONT
WATERTOWN
CAMBRIDGE
NORTH CAMBRIDGE
SOMERVILLE
MEDFORD
W. MEDFORD
MALDEN
MALDEN SQ
EVERETT
CHELSEA
REVERE
BRIGHTON
ALLSTON
FANEUIL
BROOKLINE
SOUTH BOSTON
EAST BOSTON
BOSTON HARBOR
CHARLES RIVER
BACK BAY
MYSTIC RIVER
MYSTIC LAKES
FRESH POND
SPY POND
HARVARD SQ
EAST CAMBRIDGE
PARK ST.
CHARLESTOWN
EVERETT STA
WOODLAWN
LINDEN
B'WAY-MALDEN
B'WAY-CHELSEA
GLADSTONE ST
ORIENT HEIGHTS STA
MAVERICK STA
CITY POINT
WATERTOWN
WALTHAM
NEWTON COR
WAVERLEY
ARLINGTON HEIGHTS
MEDFORD SQ
COOLIDGE COR
LAKE ST.
Connects with East Mass St Ry For Winchester Woburn Burlington Lowell
Connects with East Mass St Ry For Melrose Wakefield Reading
Connects with East Mass St Ry For Revere Lynn Swampscott Marblehead Salem
Connects with East Mass St Ry For Stoneham
Connects with East Mass St Ry For Winchester Stoneham Wakefield Arlington
Connects with Middlesex & Boston St Ry For Lexington Bedford Concord Billerica
Connects with Middlesex & Boston St Ry For Waltham
Connects with East Mass St Ry Bus For Revere
W. Newton
Auburndale-Norumbega Pk
Newton Lower Falls
Wellesley
Natick
Framingham
Needham

HOW ARTIFICIAL LEATHER IS MADE

Leather substitute, or artificial leather, as it is known, is a modern chemical product, and it is probable that of the thousands who use it daily for one purpose or another, there are only a few who really understand of what it is made, says F. J. Bryne, writing in *Forbes Magazine* on how industrial chemists have brought comfort and even luxury within the reach of the many.

The base of artificial leather is cotton fabric woven with great care and strength and dyed with required color. Then comes the application of another material, known in chemical circles as "pyroxylin jelly," a soluble cotton produced by treating cotton with nitric acid, which makes it chemically quite another substance. This "jelly" gives the fabric the qualities which enable it to be used for so many varied purposes. It is carefully applied to the base in many thin applications or coats and penetrates the fabric, becoming inseparable and giving it a nonabsorbent surface which is impenetrable to grease, dirt and dampness.

Without this substitute leather we should all have to pay more for automobiles, books, shoes, trunks, suit-cases, leather-upholstered furniture, gloves, hats, and a hundred other articles of everyday use.

Says Mr. Bryne, "The chemist, in making leather substitutes, produced a product that is better than the inferior grades of leather, just as the chemist, in producing artificial silk, produced a material better than the inferior grades of natural silk, and, therefore, made available to mankind wonderful new substances which make it possible greatly to extend luxury and comfort at prices within the reach of the many."—*Business Chemistry.*

SOUTH BOSTON POWER STATION

The cover design of this issue is an interior view of the turbine room at South Boston Power Station, taken from the east end of the station, and shows the three 15,000 K.W. turbo-generators, two installed in 1911 and one in 1912, a partial view of the 40,000 K.W. turbo-generator installed in 1916, and on the floor parts of the new 35,000 K.W. turbo unit which has since been assembled and put in commission.

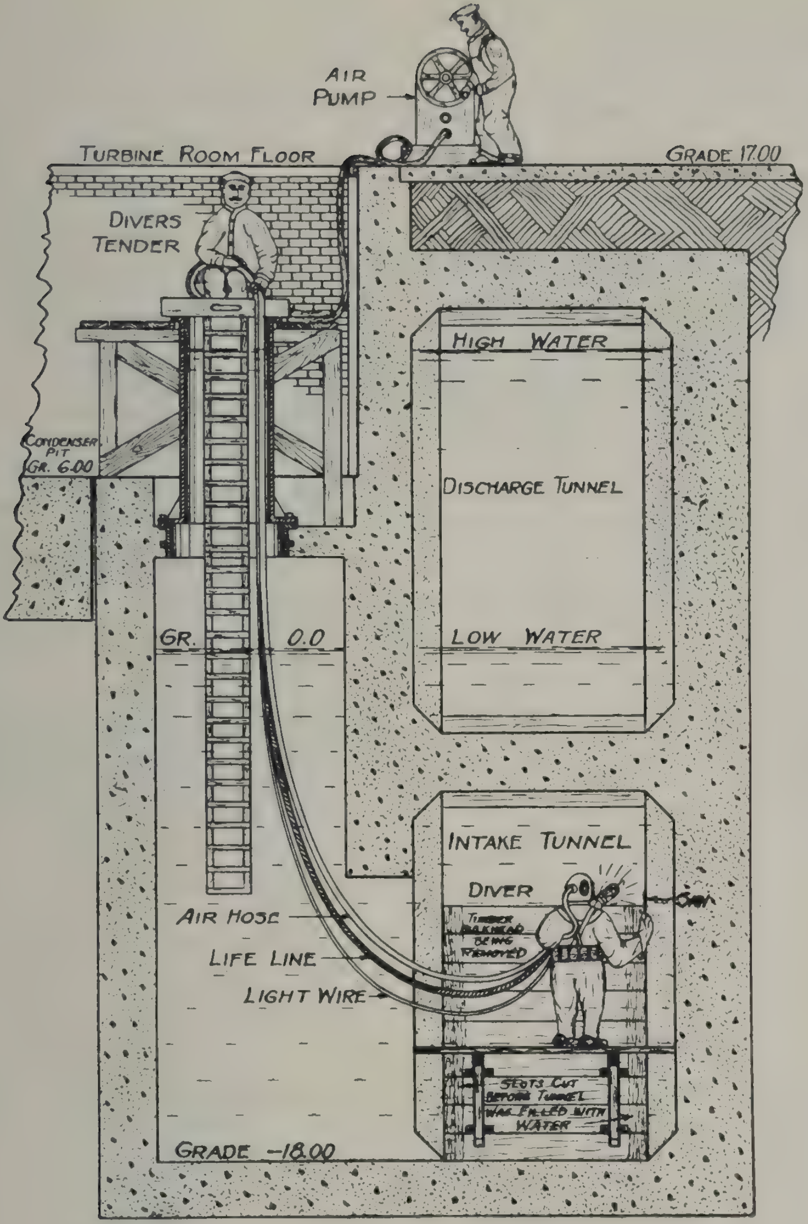
The total generating capacity of this station, including the new 35,000 K.W. unit, is 120,000 K.W.

This is our main generating station and through it is furnished the major part of alternating current which is transmitted to our substations through 16 13,200-volt, 3-phase cables. This power is converted to direct current at the substations from where it is delivered to the feeders and trolley for car service.

TWELVE THINGS TO REMEMBER

The Value of Time
The Success of Perseverance
The Pleasure of Working
The Dignity of Simplicity
The Worth of Character
The Power of Kindness
The Influence of Example
The Obligation of Duty
The Wisdom of Economy
The Virtue of Patience
The Joy of Originating
The Improvement of Talent

—*Marshal Field.*



YES! WE HAVE DIVERS.

The above cut shows a diver descending to intake tunnel at our South Boston Power Station for the purpose of removing the 12-inch hard pine bulkhead between the old and new section of the salt water intake tunnel which is used for supplying water for the steam turbine condensers. The floor of this tunnel is 20 feet below the surface of the water at low tide.

Work such as this is done under great difficulties in a diver's suit, and requires great care to prevent sections of the bulkhead from getting adrift, and, possibly, at a later time lodging in the pumps with resultant damage to the equipment. The difficulties of this work and the care required are evidenced by the fact that the services of two divers for 8½ days were required to remove the bulkhead.

Each time an extension is made to the existing station, these temporary bulkheads in the intake tunnels are provided so that the station can be operated without interruption during the period of construction. After tunnel extensions have been completed and necessary pumps and piping installed, the bulkhead is then removed and water allowed to flow into the new portion of the tunnel.

RAPID TRANSIT LINES BOWLING LEAGUE

The Rapid Transit Lines Bowling League closed a successful season on Monday, March 10th, 1924. Fifty-one members and guests enjoyed a banquet spread at a downtown hotel, followed by a theatre party at one of the leading theatres, at which His Excellency Governor Cox was also present. Good fellowship prevailed and while the league leaders felt justly proud of their position, the spirit of cooperation and good fellowship was equally divided.

LEAGUE STANDING

Team	Won	Lost	P.C.	Pinfall
Equipment Div.	70	14	.833	27.217
Road Div., R. T. L.	56	28	.666	26,188
Maint. Office, R. T. L.	50	34	.595	26,305
Gen'l Office, R. T. L.	40	44	.476	25,960
Steel Div.	40	44	.476	25,944
Building Div.	30	54	.357	25,173
Road Div., Surface	28	56	.333	24,455
R. T. L. Shops	22	62	.262	23,144

FEBRUARY OPERATION

	1924	1923
Revenue exceeded cost of service	$19,247.66	$148,812.68
Ratio operating expense to operating revenue	72.23%	66.54%
Revenue per car mile operated	64.10c	67.23c
Revenue per car hour (A. E. R. A. Standard)	6.06	5.96
Revenue passengers	32,525,051	30,151,023
% 5c fare passengers	27.02	25.39
Average fare per revenue passenger	8.649c	8.730c
Revenue passengers per car mile operated	7.263	7.532
Car miles operated	4,477,538	4,003,018
Trips operated	531,925	479,633
Employes complained of by car riders	106	121
Complaints in regard to car service	26	28
Average number of witnesses per accident	3.18	3.82
D. C. K. W output gross for month	27,539,085	26,093,080
Maximum K.W. hour load	84,650	78,610
Tons of coal consumed	26,626	27,155
Lbs. of coal burned per K.W. D.C. at cars	2.171	2.336

EDWARD DANA, *General Manager.*

March 31, 1924

Vol. 3 APRIL, 1924 No. 4

*9388.744b.5

PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

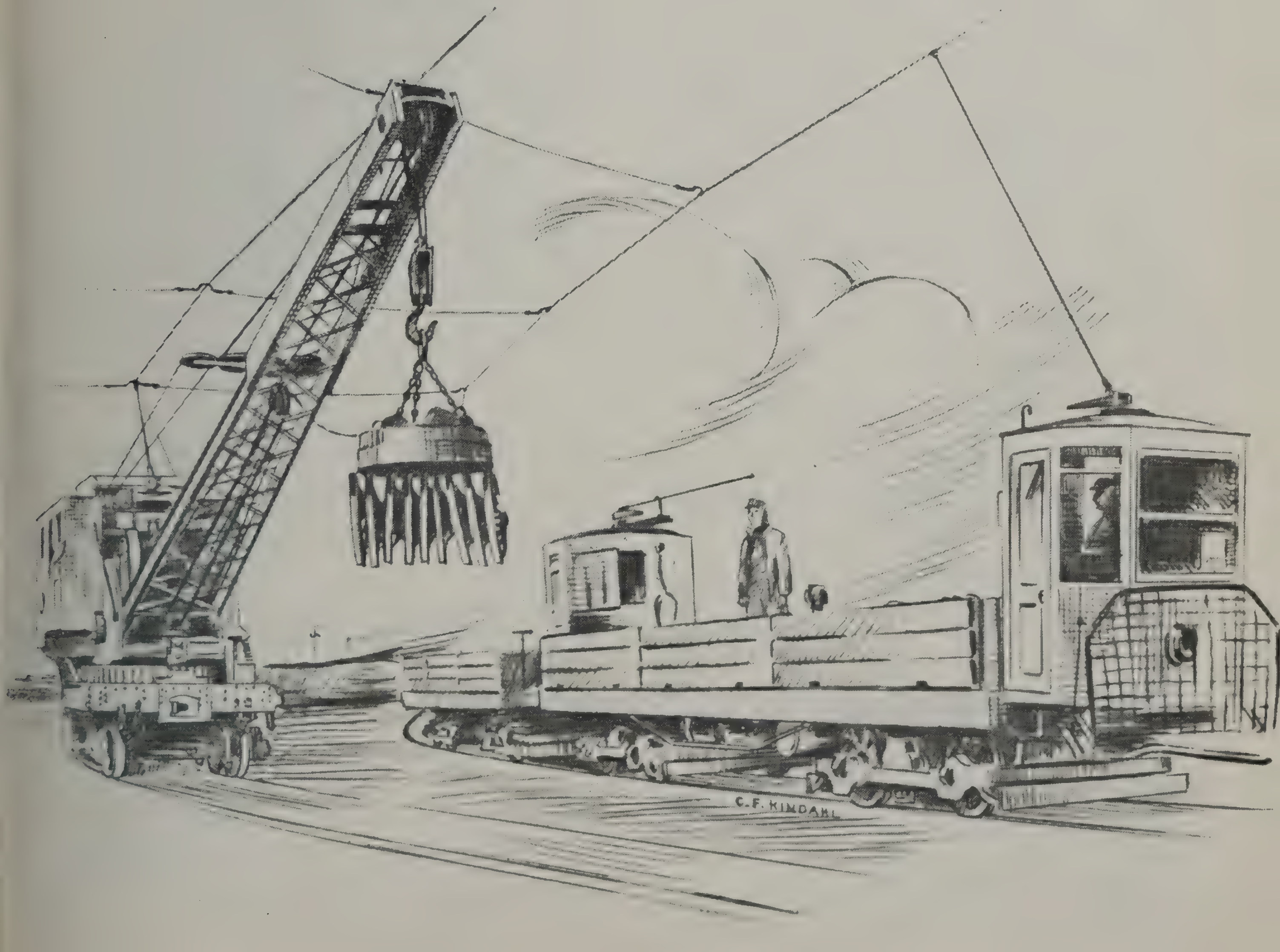
Jan. 7, 936

CO-OPERATION

SERVICE

SAFE FOR THE CAR RIDERS SURE

SATISFACTORY



WHAT IS ON YOUR MIND?

In a large organization such as ours some of us occasionally feel that we have thoughts which if followed would improve the service, but since we were not consulted, the benefit of our thought was lost.

In the spirit of co-operation it seemed that if any employee, who cared to do so, was given the opportunity to call attention to some subject which was on his mind in connection with our plant or its operation, constructive results might be obtained.

Write the General Manager, mark it personal, and send it to 31 St. James Avenue.

THINKITOVERANDOVER

Mr. Operator, Conductor and
Motorman,
How about that near accident?
Has it registered?
It should, but if it has
been forgotten there is something
wrong in your makeup.
You may say, "I saved the day."
That's it—You saved the day
for everybody.
Do you profit by others who have
had serious accidents?
The writer a 10-year motorman has
because it registered.
Do the right thing at the right
time.
It's no secret
Just sense it out
for yourselves.
There's no secret to it.
Accidents should show a decrease
the coming month.
YOU WILL HELP

GIFT OF SALEM STREET CAR-HOUSE MEN APPRECIATED

The following letter from the treasurer of Lawrence Memorial Hospital of Medford was received by an employee.

"Dear Sir:—

"Owing to the hurry and confusion incident to the opening of the hospital, a number of matters were side-tracked, among them was your letter.

"On behalf of the directors I acknowledge with thanks the receipt of three hundred dollars in cash, which Mr. Buss handed me, the same being a contribution from the employees of the Salem Street Station, Boston Elevated Railway, for the purpose of furnishing a room at the hospital.

"The plate has been attached to the door, designating the room as furnished by you and your fellow contributors.

"The directors appreciate the spirit which prompted this gift and trust that we may count on your continued interest and co-operation in making the hospital a success.

"With apologies for the delay, believe me,

"Very truly yours."

WHAT IS IT?

What is it moulds the life of man?
The weather.
What makes some black and others
tan?
The weather.
What makes the Zulu live in trees,
And Congo natives dress in leaves,
While others go in furs and freeze?
The weather.

—*Anonymous.*

It's everybody's business to be careful.

—*Commonwealther.*

THE ROMANCE OF ACCOMPLISHMENT

For days the printed notice had coldly stated that the East Boston Tunnel was to be closed for 57 hours to make the change from surface car operation to rapid transit trains, indicating that the labor of over two years beneath the surface of the earth was nearing completion.

As the hour approached it was evident that the busy life of those affected was to go on as usual and only when the event actually occurred would full realization come. It was drizzling and the night before a holiday when the last surface car to hold sway over the Tunnel which had been its own since the opening date, when the first trolley car entered the tube in December, 1904, made its stop at Maverick Square almost unnoticed.

A group of officials exclaimed "There goes the last surface car!" The Motorman inside heard it, bestirred himself and smiled as if he too had just realized that he would always be the last man to operate a surface car through the East Boston Tunnel. A few passengers heard the remark and started to gossip at the news.

The door closed, the bell rang, and the car moved slowly down into the sub-aqueous tube. Hardly had the rear light disappeared than groups of men who had been waiting outside along the square went into action. Crane cars, flat cars, acetylene tanks and other maintenance paraphernalia literally poured down the inbound track. A quarter of a mile from the Tunnel entrance the surface cars, prevented from making their customary journey, were being turned back on crossovers, and a fleet of auto buses swung into position to fill in the gap for the passengers to reach the ferries to continue their ride. The ferry service had been increased and almost before the people realized it a new transportation route was taking the place of the old, safely, sufficiently and as if it had always been so.

The words of demagogues predicting failure to cope with the situation had been belied, and the role of the critic who bases his cry on fear, rather than fact, was again discredited.

Planning, coordination, and the spirit of the public service was in complete charge.

And that service was continued without mishap or disruption for 57 hours and 1114 bus trips carried 43,269 persons over ruinous roads on their various ways.

Returning to the tube finds the last car gone and the Tunnel completely captured from end to end with various organized gangs, each doing its own specialty, previously planned, and with vim. Rail was being laid, rail was being cut, concrete was being poured, carpenters were at work, wire was being strung, cables tested. All was order—all were at work.

As the hours rolled by shifts were changed, lunches served and the working schedule constantly exceeded.

At seven o'clock Sunday evening a test train was operated for third rail and station platform clearances, and at one o'clock Monday morning practice trains were in operation by the third rail.

At exactly 5.08 a. m. the first passenger train left Maverick Square and the Tunnel was again at the service of the car rider.

At the close of the first day of

train operation, 72,978 passengers had been transported in and out via the East Boston Tunnel and one more transportation accomplishment was over.

Paraphrasing a famous poem by Longfellow, the spirit of the occasion is characterized as follows:

Listen, good friends, and you shall read
Of all-night toil for an urgent need.
On the eighteenth of April in Twenty-Four
Hardly a soul heard the hammers roar
Or thought of the men who accomplished the deed.

Brains, muscle and brawn and the will to do,
Modern machinery did its work too,
Finished the job while the skeptics cried,
"How many days must we wait for a ride?"

Buses and ferries and rain galore
Free rides for kiddies from shore to shore.
Monday by schedule, in the sunshine,
Work all done and cars running fine,
Everything right on the Tunnel line.

STATISTICS OF EAST BOSTON TUNNEL CHANGE

1525	men engaged directly or indirectly
2185	meals served
18000	ft. third rail installed
20000	ft. Z bar guard rail removed
500	lin. ft. track surfaced
800	ft. track gauged
9400	ft. track respiked
350	lin. ft. special work removed
724	lin. ft. special work installed
3500	ft. bridge guard installed.
11276	sq.ft. temporary wood platform installed
90	sq. ft. concrete platform installed
31	carloads of material taken into tunnel
45	carloads taken from tunnel
30	carloads rubbish removed
22	signal insulation joints installed

EQUIPMENT USED

15	Oxy-acetylene cutting outfits
14	service cars
3	rail cars
4	crane cars
7	push cars
8	trucks
2	welding machines
2	grinding machines
3	automobiles

A NOTE OF APPRECIATION

April 24, 1924

Mr. Edward Dana
General Manager

My dear Mr. Dana:

The trustees at their meeting yesterday commented in words of praise upon the skill, energy and enthusiasm displayed by those engaged in the preparation of the East Boston tunnel, for the change in operation, and they extend their congratulations upon the successful outcome of a task that called for all possible dispatch, consistent with safety under difficult conditions.

You are requested to see that the contents of this letter are made known to all who share in its encomium.

Very truly yours,

JAMES F. JACKSON
Chairman

INDUSTRIAL ACCIDENTS

The Transit Mutual record for the last three years ending March 31st, showing employees' accidents, is as follows:

	1921	1922	1923
Non-fatal	1604	1528	1686
Fatal	8	8	4
Dismemberment Cases where employees lose a leg, arm, finger, toe or eye	4	2	5

We may all be thankful that the loss of life has been cut in halves, and hope for the day when there will be no loss of life. Every injured employee loses time to himself and the service. Preventing injury benefits all. Resolve not to get hurt or by carelessness cause injury to other employees. Reduce the industrial accidents in 1924-1925. President Coolidge says:

"The effect, in reducing to the minimum the human and economic loss due to avoidable accidents, is so apparent that there ought not to be the necessity to urge activities of this kind."

Maverick Station, East Boston Tunnel, Westbound Platform.

LIFTING MAGNETS

The cover design of this issue of the Bulletin shows an interesting piece of equipment. At George Street Yard there are two of these lifting magnets for use with 10-ton locomotive cranes. Each magnet is 45¼″ in diameter and weighs 3,400 lbs. The current consumption is 33 amps. at 600 volts, D. C.

The magnets are used for loading and unloading rail, miscellaneous scrap and scrap car wheels. The magnet will lift four 33 ft. rails and will load or unload about 40 tons of rail per hour. When handling miscellaneous scrap material it will pick up approximately one-half ton load in each lift, and will load approximately 50 tons of scrap per hour. It will handle scrap car wheels at approximately the same tonnage per hour.

BOSTON ELEVATED BOWLING LEAGUE

The fourteen teams in this league, which have struggled since October 2, 1923, for supremacy during the 1923-1924 season, have finished the season, and all agree that the struggle this year was even more interesting than a year ago, and that the spirit of friendship cultivated added to the benefits of the competition.

The league's final standing is as follows:—

	Won	Lost	Pinfall
Employment	83	21	36,222
Division 1	72	32	36,062
Rapid Transit Division	67	37	35,852
Power Department	63	41	35,978
Division 4	63	41	35,865
Gen. Mgr's Office	62	42	35,003
Division 2	61	43	35,299
Repairmen	60	44	35,080
Albany St. Shops	48	56	34,503
Auditors	40	64	34,163
Lenox St.	34	70	33,906
Instruction School	33	71	34,419
Division 3	26	78	33,263
Claim Department	18	86	31,930

THE COMMONWEALTH OF MASSACHUSETTS

Executive Department
State House, Boston

The needless injuries and loss of life from the reckless and careless operation of motor vehicles must stop. They lessen the efficiency of our generation. Whether a man operates a pleasure vehicle or a truck, he must be made to understand in the clearest and most forceful way, that the responsibility for injury and death cannot be escaped. Manufacturers and men engaged in any business that involves the use of automobiles and trucks can be of great service to their Commonwealth and humanity by impressing upon the drivers of such vehicles the necessity for the utmost care and caution at all times.

The problem of making the roads safe for pedestrians and operators of automobiles should be the personal problem of every person of the Commonwealth.

(Sgd) CHANNING H. COX.

COMPARATIVE NEWS ITEMS

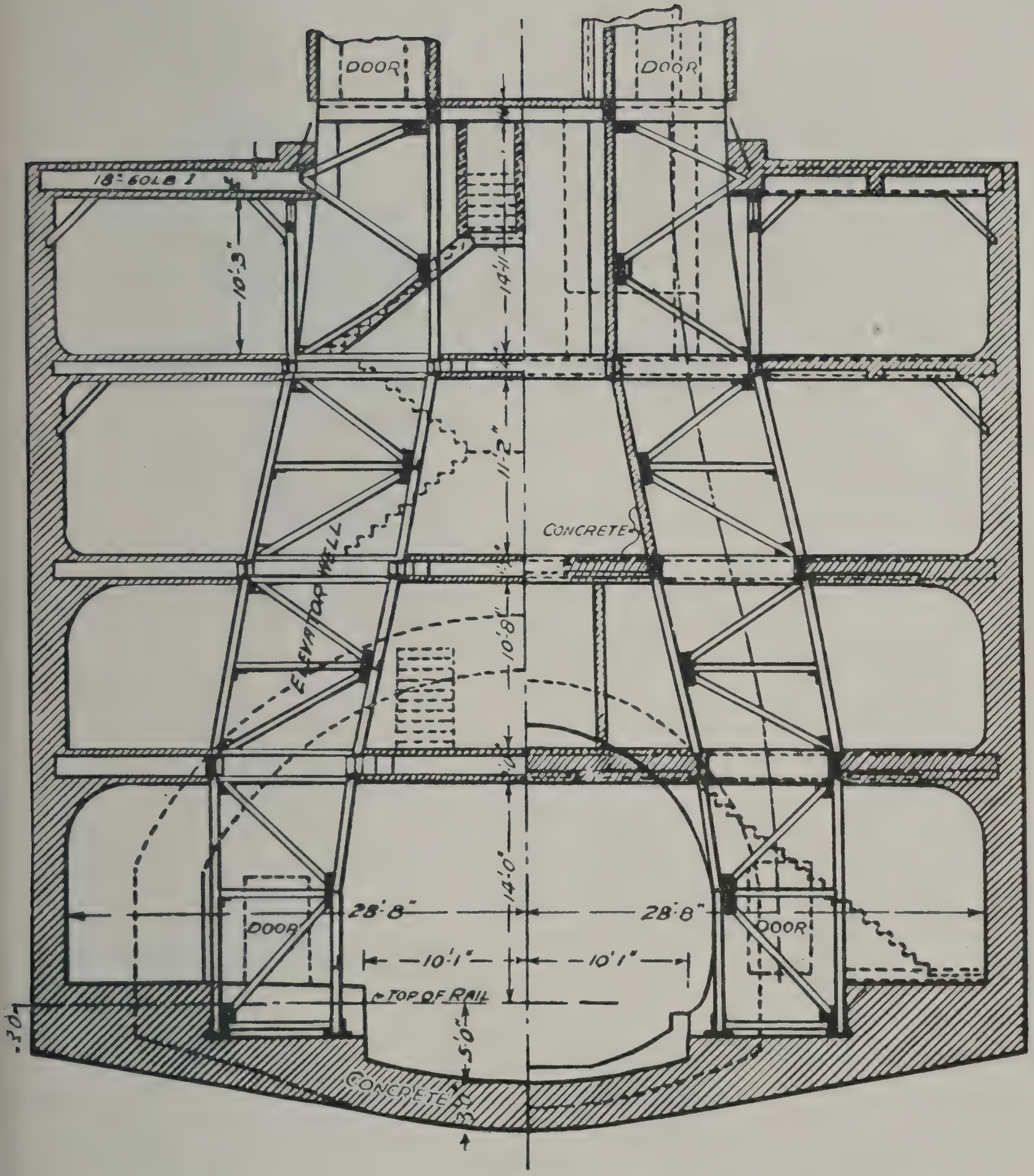
Boston Transcript, March 27, 1856

"Cambridge Horse Railroad: Five trips were made on the road yesterday to the perfect satisfaction of a throng of passengers. It was demonstrated that two horses tandem made the trip with a car containing 40 passengers, with more ease than they could have drawn an empty omnibus on the street. A special trip for the observation of a number of gentlemen was made early this afternoon. . . . ."

Boston Post, April 21, 1924

East Boston Tunnel reopens with rapid transit trains.

Maverick Square station reconstructed; third rail installed; station lengthened; all steel cars operated; changes cost $2,500,000.



TYPICAL CROSS-SECTION OF THE ATLANTIC AVE. STATION.

A NOVEL ELEVATOR

The bulletin for February described our escalators, but we have, at the Atlantic Avenue Station of the East Boston Tunnel, as shown in the diagram, one of the few elevators of its kind in the world. This has a lift of 70 feet, and the elevator in travelling from Atlantic Avenue Chambers moves sideways during its upward journey. Approximately 4,000 passengers are handled daily by this elevator.

East Boston Tunnel Train.

MARCH OPERATION

	1924	1923
Revenue exceeded cost of service......	$75,777.79	$335,937.78
Ratio operating expense to operating revenue	72.25%	64.67%
Operating revenue per car mile operated	63.33c	68.20c
Operating revenue per car hour (A. E. R. A. Standard)	6.03	6.06
Revenue passengers	34,769,274	34,690,068
% 5c fare passengers........................	27.14	25.43
Average fare per revenue passenger	8.643c	8.728c
Revenue passengers per car mile operated	7.192	7.661
Car miles operated...............................	4,834,176	4,527,909
Trips operated	574,467	543,889
Employes complained of by car riders	145	129
Complaints in regard to car service..	27	26
Average number of witnesses per accident	3.66	3.35
D. C. K. W. output gross for month	26,041,280	26,188,790
Maximum K.W. hour load..................	78,920	77,110
Tons of coal consumed.......................	25,194	27,371
Lbs. of coal burned per K.W.D.C. at cars	2,172	2,347

EDWARD DANA, *General Manager.*

April 30, 1924

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Vol. 3 MAY, 1924 No. 5

PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

CO-OPERATION

SERVICE

FOR THE

SAFE CAR RIDERS SURE

SATISFACTORY

RESERVE FUND

On July 1, 1923, the Reserve Fund as required by law was intact		$1,000,000.00
July operation resulted in a deficit of	$285,004.74	
August operation resulted in a deficit of	319,516.56	
September operation resulted in a deficit of	251,688.05	856,209.35
		$143,790.65
October operation resulted in a surplus of	$ 15,830.84	
November operation resulted in a surplus of	83,410.50	
December operation resulted in a surplus of	374,464.85	
Jan., 1924 operation resulted in a surplus of	125,758.50	
February operation resulted in a surplus of	19,247.66	
March operation resulted in a surplus of	75,777.79	
April operation resulted in a surplus of	16,404.23	710,894.37
		$854,685.02
Profit and Loss Items, Cr.		41,077.66
Reserve Fund on April 30th, 1924 or still $104,237.32 less than the amount required by law.		$ 895,762.68

THIS YEAR'S EXTENSION COURSES A SUCCESS

The three courses which have been carried on at the Instruction School during the past Winter in Practical Electricity, Dynamo-Electric Machinery and Public Utility Economics came to a close at dinner at the Somerset on May 8th, 1924, at which time Hon. James F. Jackson, Chairman of the Board of Trustees, Mr. Payson Smith, Commissioner of Education of the Commonwealth of Massachusetts, and Professor A. Lawrence Lowell, President of Harvard University, addressed those who received certificates.

It is a satisfaction to know that this work upon the Boston Elevated stands in the front rank of what is going on in the country along these lines, and it is hoped that when the work is taken up again in the Fall we will advance to an even more successful season than the last two have been.

The remarks of Mr. Jackson are printed in this Bulletin as well as the impressions of one of the Electric Railway Journal editors who was invited to be present at the exercises.—*Practical Science.*

Cakes of ice were put to a rather unique service not long ago by a California ice company during the construction of added plant facilities. In order to permit a 22½-ton tank to gradually settle on its permanent foundation, that company conceived the idea of placing the tank on blocks of ice which, in melting, carried the container to its footing without in any way wracking it.

THE MAN AND THE MACHINE

[Remarks of Chairman Jackson at graduation exercises of University Extension Classes]

Our street railway service is a service of the man and the machine. If both were perfect the service would be perfect, but we do not dwell in a world of perfection.

What about the machine? Well we know that it was in bad condition but that it is being repaired and improved; that worn out and obsolete cars are giving way to new cars with every device for safety, comfort and convenience; that we have train service, some of it, in advance of any train service to be found elsewhere upon street railways; that our power plant, though not yet complete, has the most modern and most efficient equipment; that more and more miles of track and roadbed of the highest type are being constructed; that our new shops and new car houses rank with the best; and we are enlarging this machine by subway and tunnel changes and extensions to stop the overcrowding of track and equipment.

What about the Man? It is a delight in answering this question to be able to speak not from the sidelines but from the team. Under the Public Control Act the trustees, general manager, heads of departments and every individual employe, are working together free from the direction or control of private interests in the endeavor to make this railway as useful as possible to our fellow citizens. I may add that the fact that we are working for a common goal which only team work can win is coming to be better and better understood.

When a splendid structure has been erected everyone who passes stops to admire it. One will ask, "Who was the architect?" The name is given and his praise is sung. Another asks: "Who was the contractor?" His name, too, is received with applause. This is all right for the work of both deserves the commendation it gets. But how about the man who carries the bricks, the man who mixes the mortar, the many individual craftsmen? Each of these has the right to point with pride to his contribution to the structure and each to a share in the glory of the completed task. All work honestly done has a dignity and importance that deserve the appreciation of the passerby and just as much whether the work is performed at one round or another on the ladder of employment. There ought to be some way by which we could reach the many and not give tribute exclusively to the few. It would mean so much to them.

The man who was given five talents used them and gained another five; the man who was given two used them and gained another two. They *used their opportunities.* The man who was given one talent buried it; he did *not use his opportunity.*

Tonight we congratulate you because you have been using your opportunities, because you have given outside the regular hours of work time, study and effort to acquire the larger education and the larger knowledge which will enable you as the men to manage better the machine which you are using.

Practically all of you except officials are connected with some labor or trade union. I believe that these organizations have accomplished much that is good, much that in all probability never would have been realized in any other way for the benefit of the working man. But there has been one feature of their development which has prevented their recognition by many who, were it not for that, would have been glad to acknowledge their usefulness and to have stood behind their endeavors. I refer to the establishing of the lower instead of the higher standard of excellence, to the bringing down of the productive power of labor to a minimum instead of the raising of it to a maximum.

It is disheartening to see a poor or indifferent workman set the pace for those who are able and willing to do better work. This may have been a necessary evil in the earlier history of these organizations, but I believe that they now have reached a footing upon which they can take a broader vision and, keeping all they have gained, gain more to strengthen their power for good.

The Trustees congratulate you because you have already furnished in the record that you have made the proof that upon this railway there is an awakening to new interest and joy in work, and to new pride in achievement.

General Manager Dana—able, alert, untiring in his devotion—has gained and keeps your respect and admiration. He knows the machine—what it has done, what it is doing and what it can be made to do. He knows and is proud of you, and I bring tonight as the message from the Trustees the assurance that we know and are proud of both you and him.

1924 Class in Economics

COMMENCEMENT EXERCISES PLEASE NEWSPAPER MAN

On the morning of May 9 a representative of the Electric Railway Journal, who had attended the exercises at the Somerset Hotel the night before in connection with the awarding of certificates to 133 men recently completing courses conducted under the supervision of the Massachusetts Division of University Extension, dropped in to say farewell to the General Manager.

"Mr. Dana," he said, "I should like to tell you what a significant gathering that was last night. The 106 men who completed the economics course; the 15, the practical electricity course, and the 12, the dynamo-electric-machine course are going to work with more enjoyment and better because of what they have learned."

"Yes," said the General Manager, "but what impressed you particularly last night?"

"The alertness of the men," replied the visitor, "the keen attention they gave to the inspiring addresses—not to mention the appreciation of the fine menu served by the Somerset chef."

"Were not the addresses by Mr. Jackson, Dr. Lowell and Mr. Smith inspiring?"

"They were all of that, and more. That was a great word picture that Mr. Jackson painted of the way in which the 'machine'—the railway property—had been improved, and how the other factor, the men, will show similarly fine results through this educational work."

"I particularly liked what Mr. Jackson said as to how the educational work had brought about an intellectual awakening—a pride in action. And it was an excellent point he made that as, in the industries, the organization of men had brought them permanent material benefits they are in a splendid position to concentrate on higher standards of achievement in production. I think that every man of us who works for a living, and that means most all red-blooded men, will agree with him. By the way, Mr. Dana, to change the subject a minute, who were those chaps who gave us that good music? The one at the piano and those two with the worth-while tenor voices? Those fellows are all right."

"They were a real addition to our program," said the General Manager.

"By the way, Mr. Dana," said the E. R. J. man, "did I understand you to say that in this year's classes 50 different positions were represented, that the average student had seen 16 years of service, and that he was 41 years of age?"

"Those were the figures. But I'm curious to hear more of your impressions of the speeches. Let's go back to them."

"Mr. Smith gave us a great outline of what education is," was the reply. "He struck a responsive chord when he repeated what some one had said—that education is what you have left after you've forgotten what you learned. I'll give you off-hand some of the things he said that struck me, for example, that the meaning of education is found in service rendered to society. This must be done through individuals, hence education must produce as many 'full-grown units' as possible. Better citizenship, he continued, means better citizens. Education should make it possible for the individual to achieve fullness of stature. It is not merely preparation for something to follow. It is concerned with knowledge and the uses of knowledge. It should teach us how to get the facts in any situation. And to crown it all, education should encourage curiosity, the desire for new truth."

"I think you caught Mr. Smith's main points," said the General Manager, "but don't forget that he said uniformity and conformity are not necessarily good things. The inquiring mind is desired. That's the reason for these courses we're having."

"Sure enough," was the reply. "Now about Dr. Lowell, I was delighted to see that the President of Harvard is interested in vocational education. He made a strong point when he said that the greatest happiness of life is mental. That was a good one where he surmised that Ben Franklin would have walked from Philadelphia to Boston for information on electricity like the men had been getting here. I'm sure he's right. Dr. Lowell gave us a fine analysis of why courses like these should be studied. First, you remember, he mentioned two that he called 'selfish.' There was the one that the man who has control of the forces of nature is more valuable than others and will in time get his reward. Then, he said, knowledge tends to gather other knowledge like a snow-ball does snow."

"How about the unselfish reasons?" queried the General Manager.

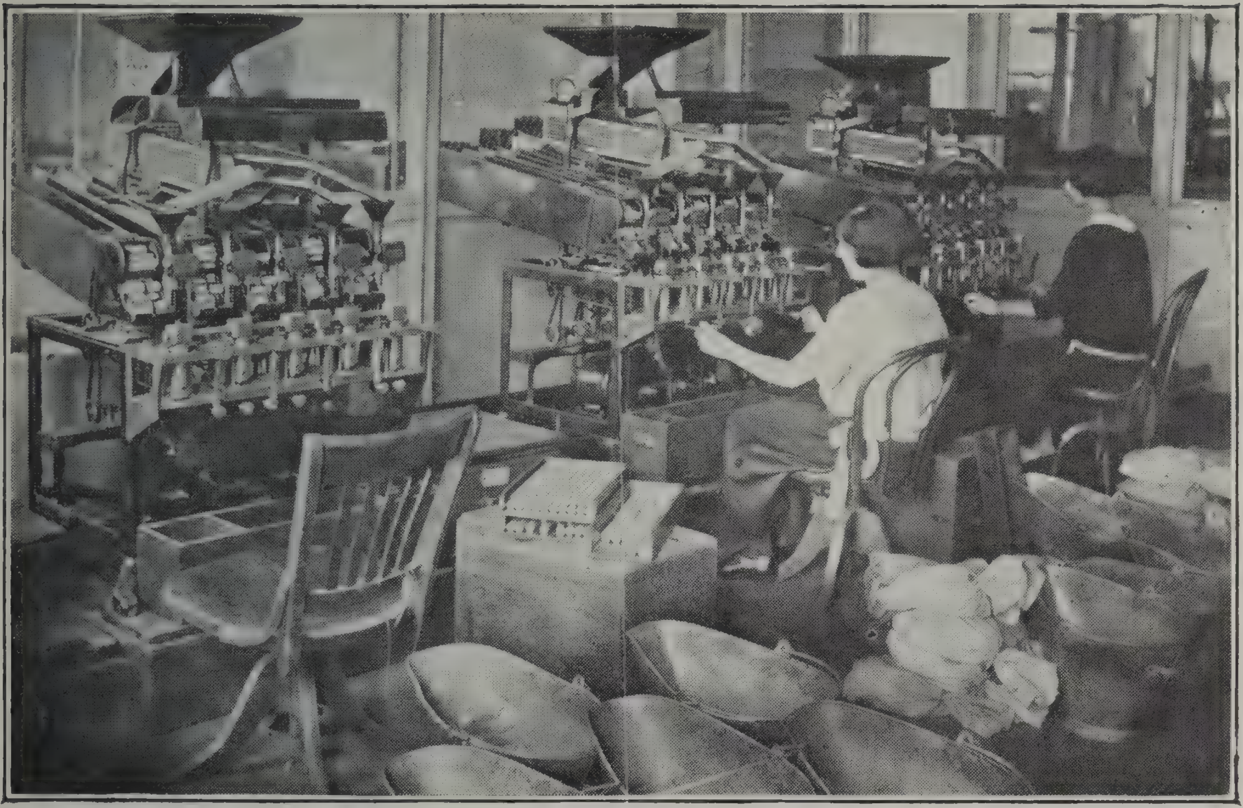
"I'm coming to those—wait a minute. Say, wasn't that a good one where he said that Mr. Smith has stolen some of his thunder? That was rich. He said 'cursed be those who have thought our thoughts before us.' Some anathema, I'll say. Well, to resume. The first unselfish reason for study is that it is our duty to the community to develop our powers to the utmost. Duties are more important rights and this is one of them. Then we are all cogs in a great machine, and the efficiency of the machine depends upon the intelligence of the cogs. It is a great thing to work in an organization."

"You evidently enjoyed the speeches to remember so much," said the General Manager.

"Oh, I always carry a little notebook," said the scribe. "Thoughts like those we heard expressed ought not to be allowed to go into one ear and out through the other. But good-bye, I've got to catch the boat. Just one word more. Those were three fine instructors who were in charge. I've known Mr. Nash a long time. He's a top-notcher in his specialty. Messrs. Bourne and Bangratz I had never met before, but they're live wires, to use an electrical simile. Hope you'll have even bigger and better classes next year. Thanks for the chance to get in on your 'party.' Once more and finally, good-bye."

BOWLING LEAGUE DINNER

On the evening of May 6, 1924, at Fox Hall, Uphams Corner, the Bowling Teams and guests sat down to dinner and an evening's entertainment which was a fitting climax to a most successful season. The songs, recitations and stories by local talent kept all hands applauding. Prizes were presented the winning teams and individuals having the best records. Hats were off to the Division 1 orchestra which kept the atmosphere charged free of charge. Mr. J. Frank O'Hare brought the message from the Trustees and the General Manager again showed his interest in the League and his pleasure at being present. Mr. Rose of the Employment Office and Supervisor Banks of Division 2 take up the duties as officers for the ensuing year.



Money Counting Machines

COIN COUNTING MACHINES AT RECEIVING OFFICE

The three machines shown in the cut are located at the Receiving Office, 31 St. James Avenue. They are made by the Sattley Company of Detroit for automatic assorting, counting and rolling of coins. These machines are really wonderful affairs. Each one is tended by a young woman. After the bent or twisted nickels and dimes are sorted out the perfect ones are shoveled into coal hods. As $6000 in nickels and about $36,000 in dimes have to be handled every day about a dozen large coal hods are necessary. These coal hods full of coins are emptied into a big hopper on top of each machine and from here the nickels and dimes fall into a long sieve and are sorted out, counted and rolled—the dimes in $5.00 packages and the nickels in $2.00 packages.

After the money is counted and wrapped it is placed in bags and weighed. A bag of dimes containing $1000 weighs 54 pounds, and a bag of nickels containing $100 weighs 22 pounds. The total weight of a heavy day's receipts would be over two tons.

EGLESTON SUBSTATION

The cover design of this issue of the Bulletin shows an exterior view of our Egleston Substation located at Washington and Bray streets, Roxbury, near Egleston square.

This station was put in service for the first time on December 30th, 1909. The original equipment consisted of two 1,000 K.W. rotary converters, power for which was furnished from a 3,500 alternating current turbo unit installed at our Dorchester Power Station, and later, from our South Boston Power Station. The capacity of this station has been increased from time to time until the equipment now consists of four 2,000 K.W. rotary converters.

In the first year of operation of this station, 1910, the K.W.H. output was 5,638,400, while in the year 1923, the output was 29,582,100 K.W.H., illustrating the growth of the power requirements in this district.

We now have twelve substations such as this to which alternating current is furnished through high tension 13,200 volt cables where it is reduced by transformers to approximately 440 volts alternating current and changed by rotary converters to 600 volts direct current —the voltage of power as fed to the feeders and trolley for car service.

APRIL OPERATION

	1924	1923
Revenue exceeded cost of service......	$16,404.23	$210,154.87
Ratio operating expense to operating revenue	72.31%	65.52%
Operating revenue per car mile operated	62.01c	65.32c
Operating revenue per car hour (A. E. R. A. Standard)	5.92	6.03
Revenue passengers	33,018,456	32,304,007
% 5c fare passengers.........................	27.17	25.50
Average fare per revenue passenger	8.642c	8.725c
Revenue passengers per car mile operated	7.039	7.345
Car miles operated..............................	4,690,546	4,397,877
Trips operated	570,726	526,849
Employes complained of by car riders	116	110
Complaints in regard to car service..	10	10
Average number of witnesses per accident	3.80	3.40
D. C. K. W. output gross for month	21,525,915	20,540,060
Maximum K.W. hour load...................	79,120	67,760
Tons of coal consumed.......................	21,350	20,984
Lbs. of coal burned per K.W.D.C. at cars	2.227	2.295

EDWARD DANA, *General Manager.*

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Vol. 3 JUNE, 1924 No. 6

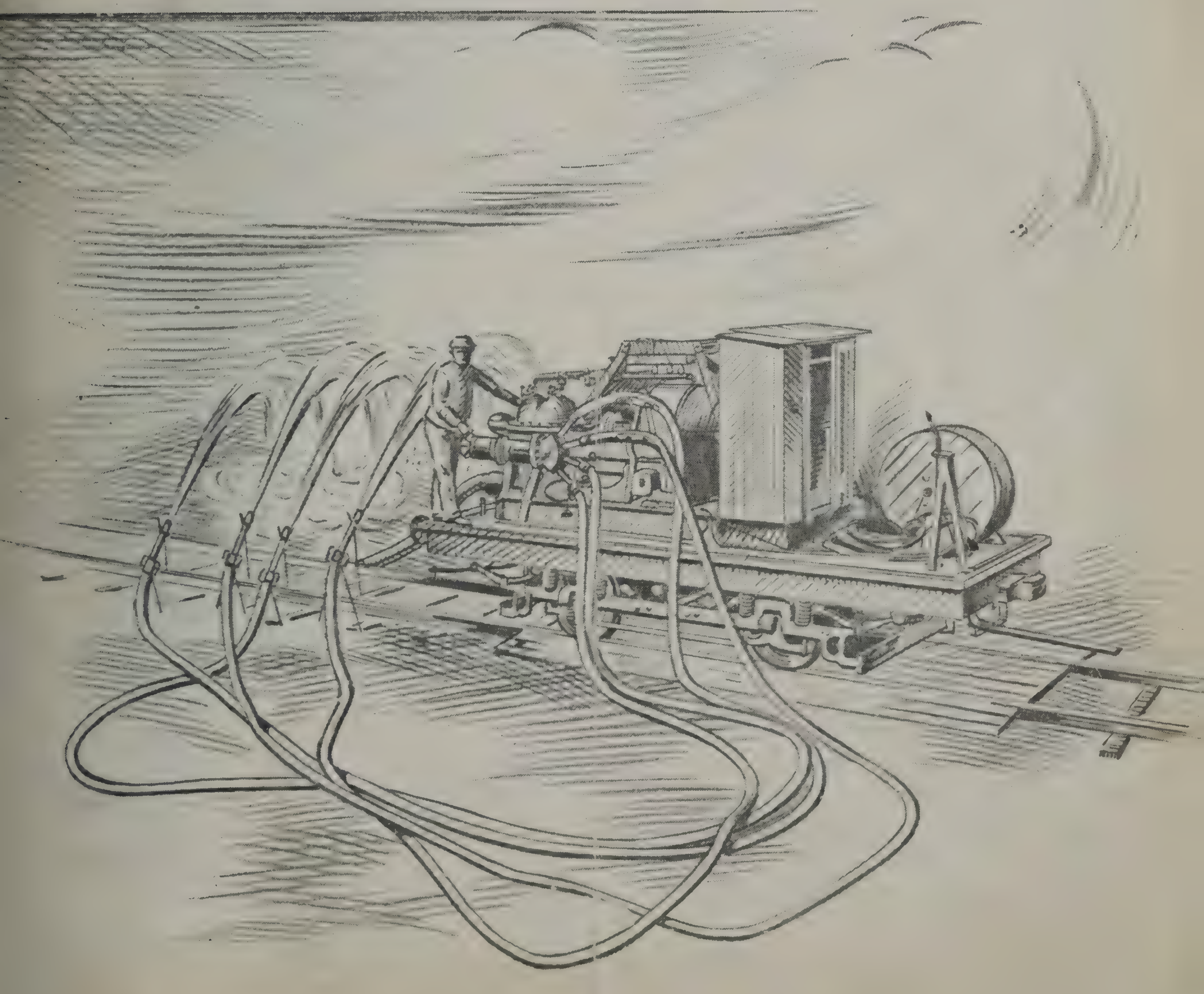
PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

CO-OPERATION

SERVICE FOR THE CAR RIDERS

SAFE SURE SATISFACTORY



EMERGENCY PUMP

(Cover Design)

The subways and tunnels through which we operate are at such a level that they require a system of automatic pumps to take care of the drainage. These pumps, however, are not and cannot be of sufficient capacity to take care of any more than ordinary seepage. Therefore, they are not capable of taking care of the excess water due to a burst main in the street.

There have been a number of occasions when high pressure water mains, laid in the city streets, have burst and the water has found its way into a subway or tunnel.

During 1921 there were three occasions when it was necessary for the railway to call upon the City of Cambridge and the City of Boston for motor driven pumps to remove water which had accumulated in the subways following the bursting of a water main.

The most serious occasion was on Saturday, July 23, 1921, when a water main burst in Governor Square and more than 500,000 gallons of water accumulated in the Boylston Street Subway at the low point under Muddy River. On that occasion a gasoline driven pumping engine was secured from the City of Boston Fire Department and was taken into the subway on a flat car. This engine pumped continuously from 3 P. M. Saturday to 8 A. M. Sunday morning before the tracks were clear so that cars could be operated through the Subway.

Immediately following this disaster the question of how to handle water accumulating in subways or tunnels was taken up with the Chief of the Boston Fire Department and an investigation was made to determine the type of pump which it would be possible for the Boston Elevated Railway to procure and have on hand for such emergency occasions.

After considerable study the Boston Elevated Railway purchased a two-stage motor driven, horizontal, end suction, centrifugal pump of 1,000 gallons per minute capacity for suction lift not to exceed 15 feet, and a discharge pressure of 150 lbs., mounted on a cast iron base plate.

This equipment is placed on a special flat car, together with necessary priming pump, electrical switch board, hose, and racks. The pump is kept at George Street Yard and is ready for duty at short notice, the pump being frequently tested to keep it in reliable condition.

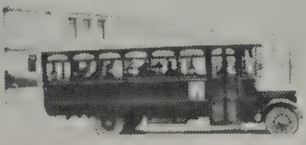
In the event of its being required, the pump can be immediately dispatched to any of the subways through which trolley cars operate direct.

In the event of it being required in rapid transit tunnels or subways, the pump and its equipment would be transferred to a rapid transit work car, either at George Street or at Eliot Square.

The pump is so arranged that it can be used as a fire fighting machine, it having suitable connections for attaching to a standard hydrant.

This equipment cost approximately $5,400.

During a recent test this pump devloped 175 pounds pressure and threw a single stream a distance of 217 feet.

Type of Car	Percentage of Service Rendered	
	1918	1924
 25′ BOX	35.4	2.3
 26′-6″ BOX	4.5	2.9
 ARTICULATED	12.9	1.9
 *1*2*3 SEMIS	8.7	8.4
 *4 SEMI	25.9	20.9
 TRAILERS	4.2	6.4
 CENTRE ENTRANCE	5.3	27.9
 BIRNEY SAFETY	0.0	2.3
 *5 SEMI	0.0	24.0
 MOTOR BUSSES	0.0	1.7
FOREIGN CARS	3.1	1.3
	100.0	100.0

TYPES OF SURFACE CARS AND PERCENTAGE OF SERVICE OPERATED APRIL 1918 AND 1924

PERCENTAGE OF MILEAGE OPERATED

Type of Car	1923	1922	1921	1920	1919	1918	1917	1916
25 ft.	4.1	5.7	9.0	16.6	27.5	33.7	34.1	35.2
26 ft. 6 in.	3.0	3.7	2.5	4.1	4.0	4.0	3.9	4.1
Art. 40 ft.-50 ft.	2.7	6.3	7.4	9.9	11.5	12.3	12.4	8.9
Semi. No. 1-2-3	9.5	11.1	11.9	11.4	10.6	9.7	12.3	12.3
Semi. No. 4	23.5	27.2	26.7	25.5	26.9	26.7	22.9	21.5
Trailers	5.9	5.8	5.9	5.8	5.3	3.8	4.2	3.4
Centre entrance	29.6	31.9	28.7	23.3	9.9	5.3	0.4	.....
Birney	3.6	5.6	6.4	1.4	0.1	.....	.....	.....
Semi. No. 5	15.3	.08	.....	.....	.....	.....	.....	.....
Bus	1.2	.02	.....	.....	.....	.....	.....	.....
	98.4	98.3	98.5	98.0	95.8	95.5	90.2	85.4
Foreign	1.6	1.7	1.5	2.0	3.0	3.1	2.8	3.3
Open Cars	.....	.....	.....	.....	1.2	1.4	7.0	11.3
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
% Total Miles R T L.	25.5	26.3	28.1	28.4	26.4	25.3	24.4	22.6

SIX YEAR CHANGE IN ROLLING STOCK

Since June 30, 1918, there have been placed in operation 845 new surface or rapid transit cars representing a cost of $10,466,690. There have been taken out of service and destroyed 2,508 surface and rapid transit cars of various types, including the open cars, representing $6,882,612.

A glance at the comparative chart shows the changes in types of cars used in April, 1918 and 1924.

Box cars and articulated cars performed 52.8% of the service in April, 1918, and only 7.1% in April, 1924.

The so-called No. 5 type car, Birney and auto bus performed 28% of the service in 1924, and these types have all been developed since 1918.

In 1918 15% of the rolling stock was out of repair; today but 6%.

Of the total daily mileage operated on the system the cars on rapid transit lines operate approximately 25%.

GOOD READING

In books worth reading, which no man can exhaust in one lifetime, you will find happiness, suggestions for the use of power and wealth, if you possess them, consolation in poverty, and strength under all conditions.

To be ignorant is not to be alive, except as the animals live.

And for ignorance there is no necessity, and no excuse except mental dullness.

A college education is not necessary, nothing is necessary except ability to read intelligently and desire to know.

And age makes no difference, except that the untrained mind past forty retains facts with difficulty. But love of knowledge makes up for that.

Among the really learned men of the world the greatest have learned more after thirty than before thirty. For the **thinking** that you do is the really important part of education, and sound thinking comes after thirty.

If you have not a good education, you can get it at no cost. It is all in the books and inspiration and happiness as well.

Read good books.

Arthur Brisbane.

"WHEN A FELLER NEEDS A FRIEND"

A few days ago in the Superior Court in Boston a suit which had been brought against the Railway came up for trial. A little girl, it was claimed, had been run over by a car and killed. Only the names of two witnesses, other than the car crew, were turned in by the conductor. One of the witnesses at the time of trial was in the Federal Penitentiary in Georgia. The lawyer for the little girl's family produced two alleged eye witnesses who told a story entirely opposite to the motorman and for lack of witnesses the Railway was obliged to settle the case, and an added burden placed upon the car rider.

It frequently happens that some person who claims to have been struck by a car door while entering or leaving a car brings suit against the Railway and although there may have been a number of passengers sitting within a few feet of the occurrence but one or two witnesses' names are turned in by the conductor. This situation is not true in all cases but happens many, many times during the course of a year.

Courts and juries are not disposed to believe the evidence of a motorman or conductor as against that of an injured person unless they are backed up by witnesses—and the more the better!

It is true that passengers do not, as a rule, like to give their names as witnesses but a courteous request to them, stating that the rules require the car crew to make a report of any accident to the Railway, and to obtain all the witnesses possible, and if the car crew does not comply with this rule they are likely to be held more or less responsible for the accident, will, in the majority of cases, appeal to the passengers and they will give their names to either the motorman or the conductor. The car crew may be perfectly innocent of any carelessness but unless they can prove it, their story of the occurrence is likely to be disbelieved by the Court and juries—and here is when "a feller needs a friend."

The conductor's or motorman's statement is not likely to be effective unless he has a sufficient number of witnesses, unconnected with the Railway, to confirm his evidence. It is appreciated that it is more difficult to obtain eye witnesses than it used to be. Most of us can recall when passengers used to ride on the front and rear platforms and consequently were in a position to see what occurred when the car and teams came into collision or a man jumped off a moving car. Modern methods, however, have done away with that type of car. The car crew, therefore, should make greater effort than formerly to obtain witnesses not only on the car but as many as possible outside the car who witnessed the occurrence. There may be other conditions making the duty of the car crew more difficult than formerly and this should spur the car crew to greater effort in obtaining the names of those persons, who were on the street or the sidewalk in a position to see the accident, as witnesses.

The Railway wants and expects nothing but truthful reports from its employes in all departments. It realizes the difficulties met in operating cars in these days, but whatever the occurrence may be it wants not only a prompt and truthful report from its employes, but it wants plenty of witnesses also. The crew should get all the witnesses possible—and then some more.

Lately we have been running behind other roads in the average number of witnesses turned in by the crews and no one connected with our Railway wants this condition to exist.

When the witnesses' names are turned in to the Claim Department as a general rule they are written to and their version of the accident is requested and during the year 1923 a little over 45 out of every 100 witnesses replied, in their own handwriting, and the great majority of these replies confirmed the version of the accident as reported by the car crews.

A little extra effort in this endeavor to obtain a large number of witnesses may be the means of substantiating the crew's statement and of saving a large amount of money—that in fair play ought to be saved—to the Railway car riders. Many verdicts are reported against the Railway, however, in which, in all justice, the Railway should prevail, **and the principal reason that it does not is because it did not have all the witnesses who were procurable at the time.**

Juries have a natural sympathy for the individual, and all things being anywhere near even, will render a verdict for the individual.

When an accident happens to a passenger the first duty of the employe is to look after the injured person and then to get the names of witnesses. The motorman should render all assistance he can consistent with the rules.

We want the good opinions of the Courts and juries as well as the general public and when we go into Court to defend a case it is because we believe the Railway is not responsible for the accident and it would go a great way toward establishing this good opinion if the Courts and juries learn that the employe's version of the accident is substantiated and confirmed by disinterested witnesses.

Let's get **more** witnesses then! The crew is not really responsible for the accidents in a great majority of claims that are brought against the Railway and the effective way to **prove it** is by **witnesses.**

—Contributed by Claim Dept.

THE TWO FARMERS

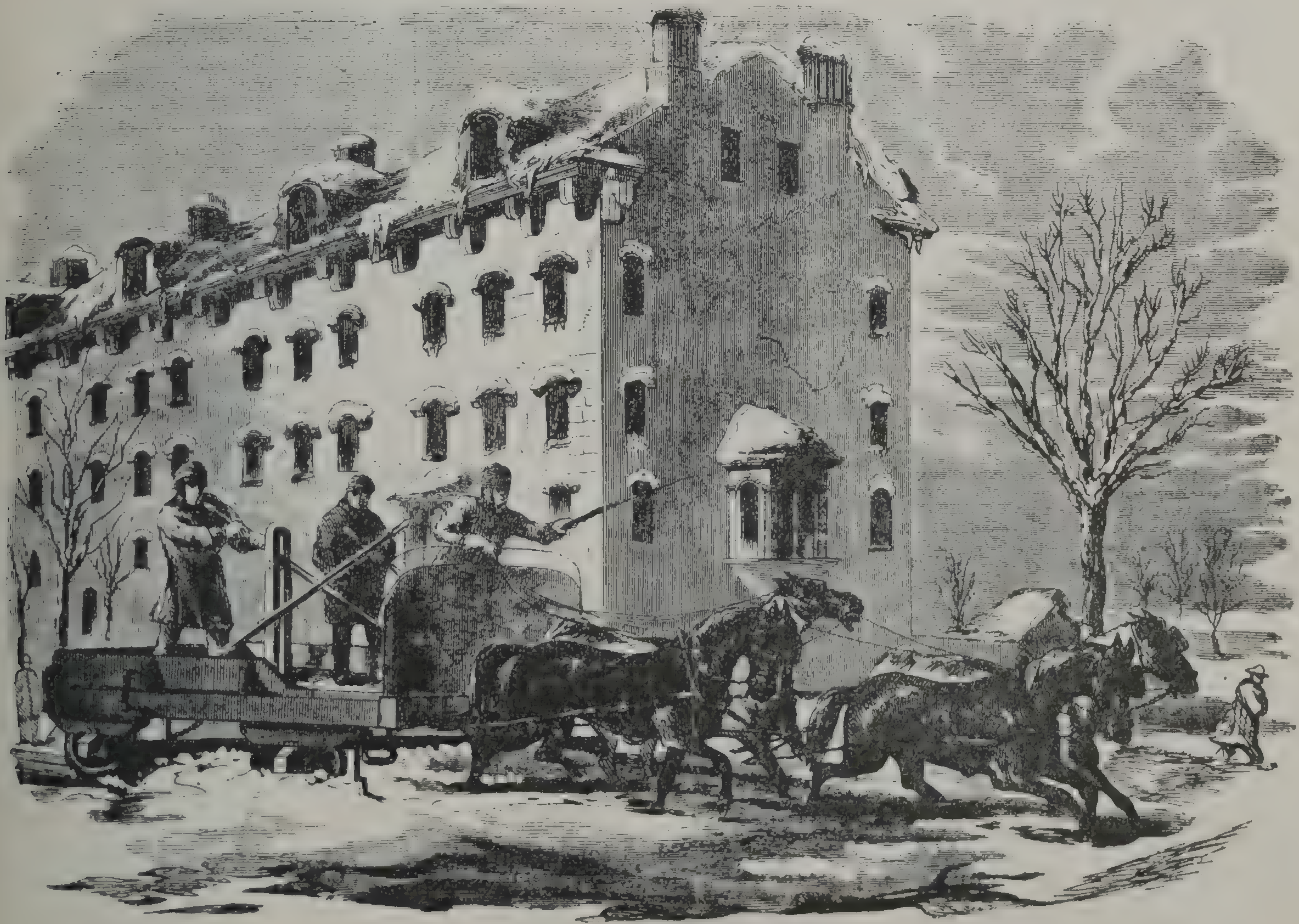
A farmer of fortune came back from the West,
And proudly was boasting of what he possessed;
He met an old friend whom he knew years before
And told some great tales by his neat homestead door.
"I've one son," he added, "the boss of them all,
He's strong as a giant and just six feet tall,
A master of horses, and king at the plow,
You don't raise such boys in the East I'll allow."
The story continued, his face beamed with smiles
I once had my acres, but now they are miles,
With horses and cattle and bold cowboys, too,
I've got them in plenty, yours seem mighty few.
I sit on my doorstep, far as I can see,
The land all belongs to my children and me.
There's fortunes for farmers away on the plains,
But you can't run a farm on city bred brains."

The old man had listened, then made this reply,
"Just forty years now, John, since we said good-bye.
You, young and light-hearted went off to the West
But I stayed behind you where I thought was best.
We both had to struggle, much cattle your gains,
While I for a living used produce and brains.
We both did our duty, each in his own way,
And now may be proud of the record to-day.
Your horses and cattle, your cowboys and lands,
All tell me how hard was the work of your hands.
Tho' courage and muscle do well on the plains,
There's room near the cities for farmers with brains.
You brought up your children more skillful with tools,
While I near the city put mine in the schools,
And if I'm not wealthy, I've honors to share,
'Tis my son who sits in the President's chair."

—Submitted by an Employe.

BALLOU'S PICTORIAL OF SATURDAY, JANUARY 31, 1857

"As the horse railroad is just now attracting great attention, we present our readers with a view representing the operations of the snow-plough for clearing the rails attached to one of the cars. This implement was used successfully in the first part of the winter, during the light snows, and worked admirably in clearing the rails of snow and ice. The scene depicted in the picture is on the 'Neck,' and the row of houses is the Malone sandstone block, which has attracted so much attention. The locality is faithfully represented and the picture was drawn expressly for the Pictorial by Mr. Champney. In deep snows it is not expected, of course, that the cars will be enabled to run, in which case stage-sleighs will be substituted, the company having already purchased a stock of eighty, so that the public will be fully accommodated. Thus far, the Metropolitan Railroad has worked admirably. In no other way could the travelling demand be met. Not only have the cars carried many more passengers than the omnibuses ever did, but the ease of their running, the facility of getting in and out of them, and the frequency of their trips, fully meet all the wants and desires of the public. Their perfect safety is an important point. The horses cannot run away with a rail-car, and a break-down, should such a thing be possible with such a strongly-built structure, would be attended with no injury. The rail-cars add a new feature to the physiognomy of Washington St., an avenue which, except its unfortunate narrowness in certain parts, is worthy of the great and growing city which it intersects, and of which it is the main artery."



HORSE RAILROAD SNOW PLOUGH, BOSTON "NECK"

CARING FOR LOST ARTICLES

All articles turned in by employes or passengers are classified by the Division Receiver into ten different classes as listed below:

Class 1—Valuable articles, such as money, pocketbooks, jewelry, etc.
Class 2—Personal belongings, such as keys, eyeglasses, pipes, etc.
Class 3—Gloves and mittens.
Class 4—Umbrellas, parasols, canes, etc.
Class 5—Books, photographs, printed matters, etc.
Class 6—Clothing of all kinds.
Class 7—Bags, suit cases, lunch boxes, etc.
Class 8—Hardware and heavy articles, tools, etc.
Class 9—Food, perishable property, etc.
Class 10—Miscellaneous — anything not included in above or anything containing articles of two or more different classes.

A description of each article is made out on a duplicate form, the original being retained in the division and the duplicate sent to the Lost Article Clerk at the General Office, who arranges them chronologically, as well as according to classification.

When an article is delivered another form is made out in duplicate, one copy being kept by the Division Receiver and the other forwarded to the Lost Article Clerk in order that she might take the original report from the "live" files and place it with the "delivered" reports.

Valuable articles are kept three days in the division and then sent to the Treasurer's Office, in which event another form is made out in triplicate. One copy is retained by the Treasurer, one is sent to the Lost Article Clerk, and the other is returned to the Division Receiver, signed, as a receipt for the safe arrival of the article. At the expiration of six months all valuables remaining unclaimed are returned to the finders.

All other articles remaining unclaimed at the expiration of sixty days are returned to the finders.

Each day the Lost and Found Advertisements are clipped from the daily newspapers, and if a similarity exists a post card is sent to the party advertising.

We have approximately 40,000 articles turned in during the year, and in looking back through this number of cards it can be readily seen which were the stormy days from the large number of umbrellas turned in. Approximately 75% of the articles turned in are returned to their owners.

ELEGY IN A MODERN SUBWAY

(Apology to Thomas Gray)

The subway tells the end of working day.
The surging crowd rush madly for the car;
The banker and the shopper in the fray
Each fail to heed the Starter's voice afar.

Now fade the station lights from out of sight
While those aboard, their sullen anger nurse,
Save where some sane soul vows, tomorrow night
To wait one moment till the crowds disperse.

Beneath that roof, within that trembling car
Where heaves the sigh of many a tired soul,
Each wedged within his narrow space ajar
The city workers, grumbling, homeward roll.

Let not good judgment mock their homeward ride
That decency and comfort they reject;
They choose the close connection, side by side,
And surely have their way in this respect.

The boast of muscle, the right-arm of power
And all that pushing, all that brute strength give,
Attend each night the inevitable hour
When toilers seek the homes in which they live.

Perhaps a genius sometime may contrive
To make restricted space, grow more and more
That, tho' the throngs unceasingly arrive,
No one may find excuse for feeling sore.

And now the moral of this tale of woe
Mayhap by this time you have surely guessed
Distribute over ALL the cars that go
And travel safely home among the blest.

EDWARD DANA, *General Manager.*

*9358.744b=5

Vol. 3 JULY, 1924 No.

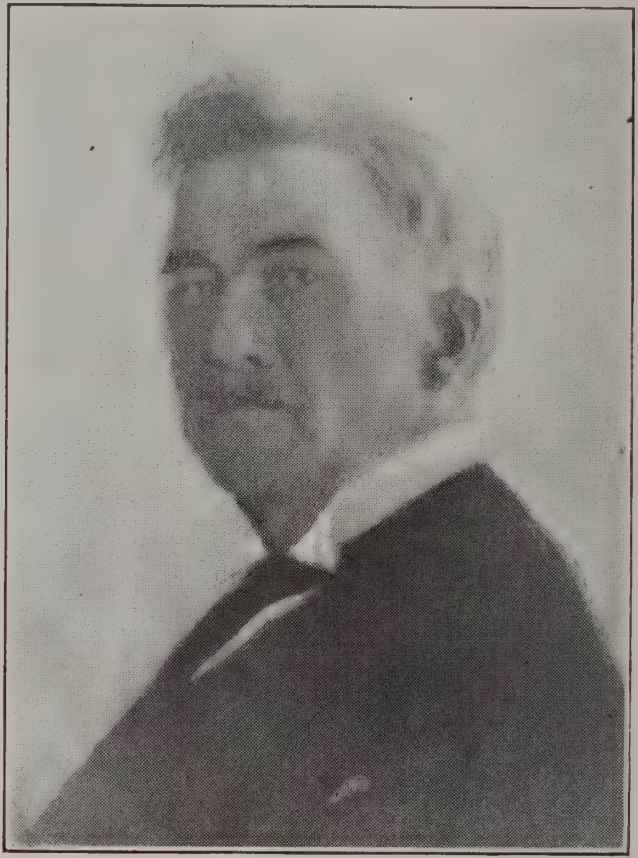
PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

Jan 7, 1936

CO-OPERATION

SERVICE
FOR THE
SAFE CAR RIDERS SURE
SATISFACTORY



C. J. LEONARD
Aug. 2, 1874 June 15, 1924

During the month of June the sudden death of Superintendent Charles J. Leonard of Division 1 shocked our entire organization. While the seriousness of his illness had been appreciated by those who were in a position to know, it was hoped that he was entirely out of danger and his familiar voice was welcomed as he returned to this office shortly before the sudden stroke.

The Railway loses in the prime of life a man who put his duty above all else. He knew the railway business and he gave himself completely to its task. That he was loved and held in the highest esteem by his associates was evidenced by the tribute paid to him on the morning of June the 17th at St. Peter's Church, Dorchester.

A short time ago he gave a brief summary of his life experiences and it is so characteristic of the man and such an inspiration to others in the service that it is quoted as follows:

"I was born in Boston, Mass, August 2nd, 1874. Attended grammar school until the age of 13, and night school later while working. After leaving school went to work for Joseph T. Brown, Druggist, then located on part of the present site of the R. H. White store, working 14 hours a day, seven days a week, one afternoon off and for $2.50 a week, with a slight advance each year for three years.

"At the end of this time I discovered that I was not fitted to become a druggist, as I did not care for the business. I was anxious to try railroading, for my father, Edward C., who, from the end of the Civil War, was connected with the New York and New England Railroad, and for years District Foreman and Master Mechanic of the Eastern Division. He tried to discourage me from this and both he and my mother, who endeavered to keep me at school earlier in life, wanted me to take up a further course of schooling. I was not to be discouraged and insisted that he take me on and give me a trial in some capacity. This he finally decided to do and instructed me to be ready at a certain time on a certain night and I went with him to an engine house, where I was introduced to Gene Potter, engineer, and his fireman, and instructions were given them by my father that I was to be broken in as a fireman. I was provided with a pair of overalls and a jumper, and boarded the locomotive, which pulled out to the freight yard and hitched on to what I thought was the longest freight train I had ever seen. Shortly after this, with a good-bye from my father, we started on a run to East Hartford. I was a little better than 16 years.

"The instructions my father gave the engineer and fireman were carried out and I shovelled what I thought was all the coal in the world, firing that engine on that 117-mile run, we arriving at East Hartford at 4 a. m. on the morning following, when I was so tried I could hardly crawl into bed, where, on awakening the same afternoon, I was so sore and stiff I could hardly move. On the day following I rode back to Boston in the caboose, all in and thoroughly convinced that my father had carried out his desire to discourage me from this line of railroading at least. I might add that it took me a week with treatment to get over my one trip.

"I then endeavored to get a position with the street railway, but was too young for the cars and was told that nothing else was open.

"At this time in 1890, the Elm Farm Milk Company opened a milk station on the New England Railroad in Dorchester, close to where I lived, and there I secured employment, where I worked for close to seven years in the following capacities: soliciting business, driving team, filling and washing cans and running one of the milk trains to Connecticut, for which I received $12 a week, later being advanced to $18.

"Sometime in 1894 I again tried for employment with the West End Street Railway as conductor, while still in the employ of the Elm Farm Company. I was again unsuccessful, being told I was too young for car work, being at that time a little over 20. In 1897 I again made application and this time I was successful and assigned to Grove Hall, Division 1, as conductor.

"From the start I was interested in my work and spent many years as a conductor, but I was ambitious and was not discouraged and I continued to do that which I hired out to do and give the best that was in me.

"In the Fall of 1909 I was given work as acting and extra starter, doing such work as rough riding at terminal station platforms, announcing destination of cars through a megaphone, etc., filling in for day clerk, night clerk, operator of switchboard, and in 1910 was given a starter's badge, which I tried to do justice to and did. On March 12, 1912, I was appointed Inspector, and on September 30th, 1914, was appointed Station Master at Lotus Place carbarns. On November 19, 1915, was appointed Chief Clerk of Division, filling this position until being appointed Chief Inspector on the 18th day of September, 1916, later being appointed Supervisor of old Division 1, and on the consolidation of the division was appointed Superintendent of Division 1 on January 7th, 1918."

ENTHUSIASM

The death of enthusiasm is the greatest possible calamity—*fight against it.*

Enthusiasm is hope, confidence in yourself, courage, a determination to succeed, or, at least, to struggle on *trying.*

Said Goethe: "Money lost, something lost.

"Honor lost, much lost.

"Courage lost, everything lost—better you were never born."

Enthusiasm includes courage in its meaning. Enthusiasm lost, everything lost—better you were never born.

Hope goes but *can* be called back. Enthusiasm dies out, but it can be made strong again.

Age is no bar to success if the enthusiasm is there.

Weakness does not prevent success if only the body is weak. It is *weak courage* that keeps men sitting down as failures when they should be going ahead traveling the road.

The trouble in the average man is not lack of ability, intelligence, strength or health. It is lack of the courage that comes from enthusiasm.

Watch yourself and that power within you. With enthuasiasm really dead and gone, your body lives still upon this earth, but, like the miserable creatures in Dante's Inferno, the real you is not here.

Courage is the *man,* and a man without courage is dead.

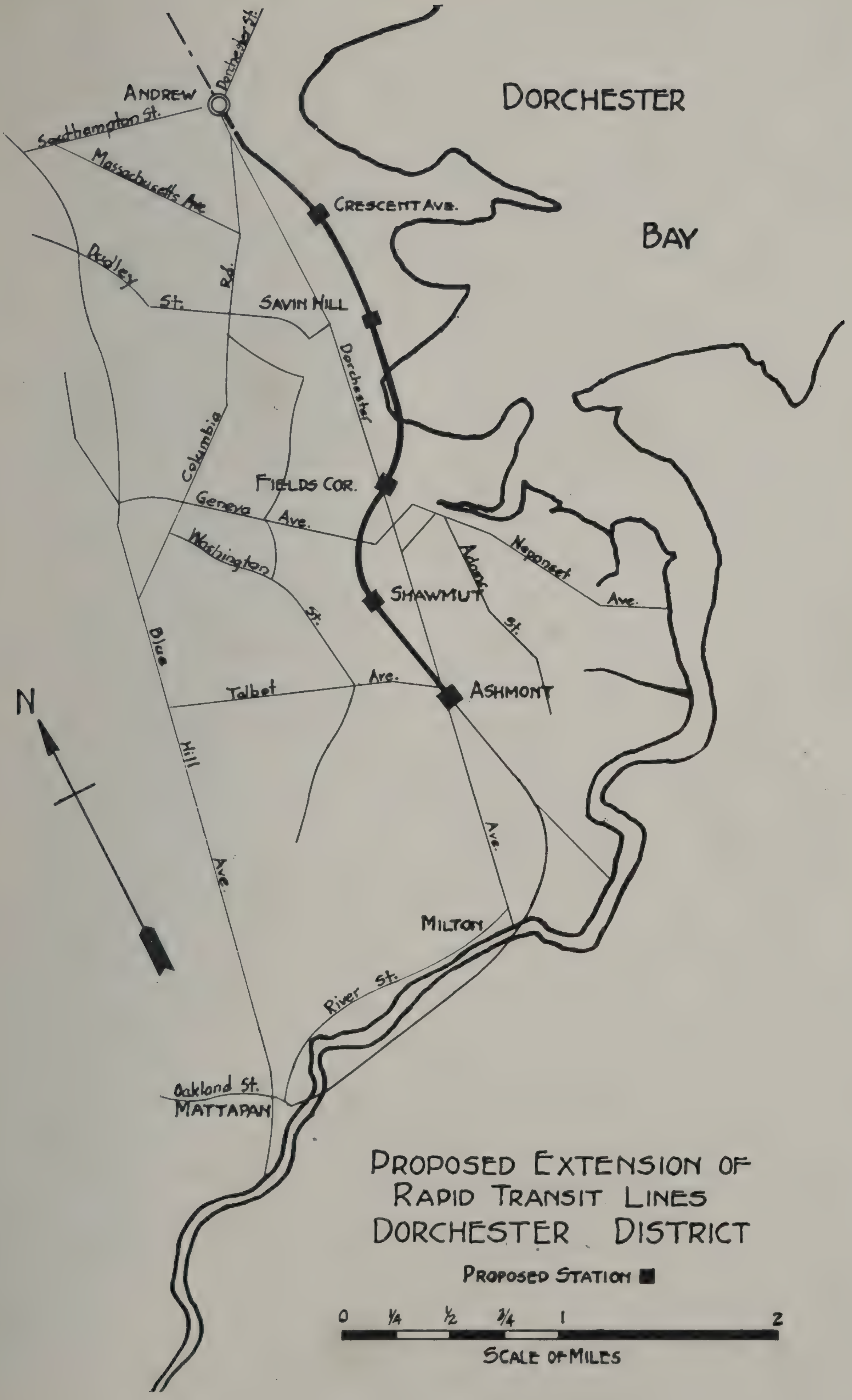
Arthur Brisbane.

A man too busy to take care of his health is like a mechanic too busy to take care of his tools.

MERIDIAN ST. DRAWBRIDGE

The cover design pictures the Meridian Street Drawbridge. The original bridge with wooden turntable was constructed in 1856 and rebuilt in 1884. After 35 years' service it was rebuilt and repaired in 1912 as it exists today. It provides a highway for pedestrian, vehicular and street car traffic between East Boston and Chelsea. The total width of the draw is 38 ft. and the length of the draw is 270 ft.: operated by electricity by means of two 15 H. P. electric motors. The speed of the draw is controlled by means of air brakes and the opening takes 3 minutes 30 seconds for its operation. The average number of openings per day is 30; the average length of opening is 4.7 minutes, the minimum being 3 minutes and the maximum 15 minutes. From 6.00 A. M. to midnight there are 5315 vehicles in both directions pass over this bridge, or an average of 295 per hour. The maximum vehicle travel from 5.00 to 6.00 P. M. is 421. There are 305 electric cars passing over the bridge daily, the maximum rush hour being 34 cars in 17 trains. Street railway travel in both directions daily amounts to 9000 passengers. In view of the fact that there is but a 21 ft. 3 in. roadway in the clear over which traffic must be carried during the Winter time, this is a prolific source of irregularity to the Chelsea car line.

Man is like a tack—useful if he has a good head on him and is pointed in the right direction, but even though he is driven, he can go only as far as his head will let him.



PROPOSED EXTENSION OF
RAPID TRANSIT LINES
DORCHESTER DISTRICT

TROLLEY WIRE

There are 489 miles of trolley wire on the Elevated system. As No. 00 trolley wire weighs nearly ½ lb. to the foot this trolley wire weighs 520 tons and represents an expenditure of $222,110.72. During the last eight years the annual renewals amounted to 48½ miles, which shows an average life of nearly 10 years. During the last two years there were 599 trolley wire breaks, or an average of 299 per year, divided as follows:

Crystallization	330	55%
Pulled down by cars, trucks, derricks, etc.	132	22%
Miscellaneous	91	15%
Small wire	46	8%

Only two metals can be seriously considered for trolley wire, viz.: copper and iron. Other metals are used in the manufacture of the wire, but they are used only in the making of alloys of which the base is copper or iron. In practice, the number of kinds of wire can be reduced to four, viz.: copper, bronze, steel and copper clad, a physical combination of copper and steel. Of these, the copper and bronze are in most general use.

Of the many qualities which enter into the manufacture of a good contact or trolley wire, the following are important: Strength, ductility, hardness, toughness, resistance to arcing, high melting point, conductivity, homogeneity, and permanence of the original good qualities under wear.

Tensile strength is an important item because of the severe strain to which it is subjected from the heavy pounding by trolley wheels and from unusual strains caused by trolley wheels leaving the wire and catching in spans and special parts of the overhead construction. The tensile strength of No. 00 hard drawn trolley wire is about 5,500 lbs. The No. 00 bronze trolley wire will withstand a pull of from 6,400 lbs. to 8,400 lbs. before breaking.

Ductility, hardness and toughness are very important qualities in trolley wire. The wire needs to be hard to resist the grinding action of the trolley wheels, yet it should have sufficient ductility and toughness to prevent breaks due to crystallization at ears, circuit breakers, frogs and other hard spots in the line.

Crystallization is the worst enemy that the overhead construction man has to fight. It hides under cover usually, and is so small that it cannot be detected with the naked eye. It is, therefore, of the utmost importance that the mixture used and the process of manufacture is such that the finished product will possess just the right degree of hardness to resist the wear of the trolley wheels and at the same time be ductile and tough enough to prevent crystallization.

Resistance to arcing, while not so important a quality as the right degree of hardness, ductility. and toughness, is nevertheless a virtue to strive for; much depends on this quality as is shown by the rapid wear on wire when heavy currents are taken from it, such as on heavy grades and at starting points.

To determine the toughness of trolley wire a torsion or twist test is made on a ten-inch piece and the results from tests on copper and bronze wires show that the bronze will stand more thon twice as many twists as the copper before breaking, the figures being copper, ten to twenty; bronze, thirty to fifty.

The high melting point quality in wire gives it the ability to carry heavy currents such as flow through a grounded wire, without fusing or annealing.

High conductivity is essential on lines where there is no feeder in multiple with the trolley wire.

The conductivity of hard drawn wire is about 98 per cent. of that of pure soft copper. The conductivity of bronze wire varies from 40 per cent. to 85 per cent. of that of pure soft copper.

The cost of bronze wire is from four to six cents per pound more than that of hard drawn wire.

The factors entering into and determining the length of service that a trolley wire will give are frequency of trolley wheel movements, the current taken from the wire, the speed of cars, alignment of wire and type of supports. Figures made from records covering a period of fifteen years show a varying life of wire of from five hundred thousand to four million trolley wheel movements, or from one to twenty years in time, depending on the varying combination of factors previously mentioned.

This statement refers to bronze trolley wire.

No wire possesses all of the good qualities mentioned, and it is necessary for the engineer to decide in each case which qualities are most important for the lines under consideration and to purchase the wire that best embodies them.

CAR AND TRAIN SERVICE MEN LEAVING SERVICE IN 1923

There are 4,273 platform men in service and 171 left the service for the year 1923, representing a turnover of 4 per cent.

The number of men leaving the service and the reasons therefor, during the years 1922-1923, were as follows:

	1923		1922	
Voluntarily leaving service	77	45 %	62	43.7%
Dismissed	52	30.5%	30	21.1%
Deceased	24	14 %	21	14.8%
Pensioned	18	10.5%	29	20.4%
Total	171		142	

DORCHESTER RAPID TRANSIT EXTENSION

The cut on page 5 shows the route of the Dorchester Rapid Transit Extension over the Shawmut Branch of the New Haven Railroad and the location of the stations. The distance between Andrew Square and Ashmont Terminal is 3.63 miles, and it is expected that work will be started shortly by the Transit Department and pushed to place this much needed transportation addition at the service of the car riders. It will distribute the traffic now concentrating at Andrew Square and eliminate the acute congestion existing at the present time.

EDITORIAL VIEW OF PROTECTING THE CHILDREN

"Drivers of street cars or motor vehicles who see a child of tender years ahead of them and in the street are expected to realize that such a child may suddenly start off in any direction. In such an instance the driver is in duty bound to obtain immediate control of the machine he is driving, to be ready, if danger to the child arises, to stop almost on the instant."

MAY OPERATION

	1924	1923
Revenue exceeded cost of service........	$96,010.44	$232,897.86
Ratio operating expense to operating revenue	70.47%	66.17%
Operating revenue per car mile operated	60.98c	64.05c
Operating revenue per car hour (A. E. R. A. Standard).........................	5.79	5.98
Revenue passengers	33,989,949	33,555,164
% 5c fare passengers..........................	27.42	25.83
Average fare per revenue passenger	8.628c	8.708c
Revenue passenger per car mile operated	6.943	7.217
Car miles operated...............................	4,904,201	4,658,805
Trips operated	617,309	558,535
Employes complained of by car riders	120	109
Complaints in regard to car service..	7	16
Average number of witnesses per accident	3.77	3.39
D. C. K. W. output gross for month	19,475,360	18,763,345
Maximum K.W. hour load..................	63,560	59,230
Tons of coal consumed.......................	18,444	19,149
Lbs. of coal burned per K.W.D.C. at cars	2.127	2.292
Revenue passengers carried per accident	33,064	35,697
Accidents per 10,000 car miles...........	2.097	2.043
Car defects per 10,000 car miles........	6.8	9.9

EDWARD DANA, *General Manager.*

July 12, 1924

9388.T446A5

Vol. 3 AUGUST, 1924 No. 8

PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

CO-OPERATION

SERVICE

FOR THE

SAFE CAR RIDERS SURE

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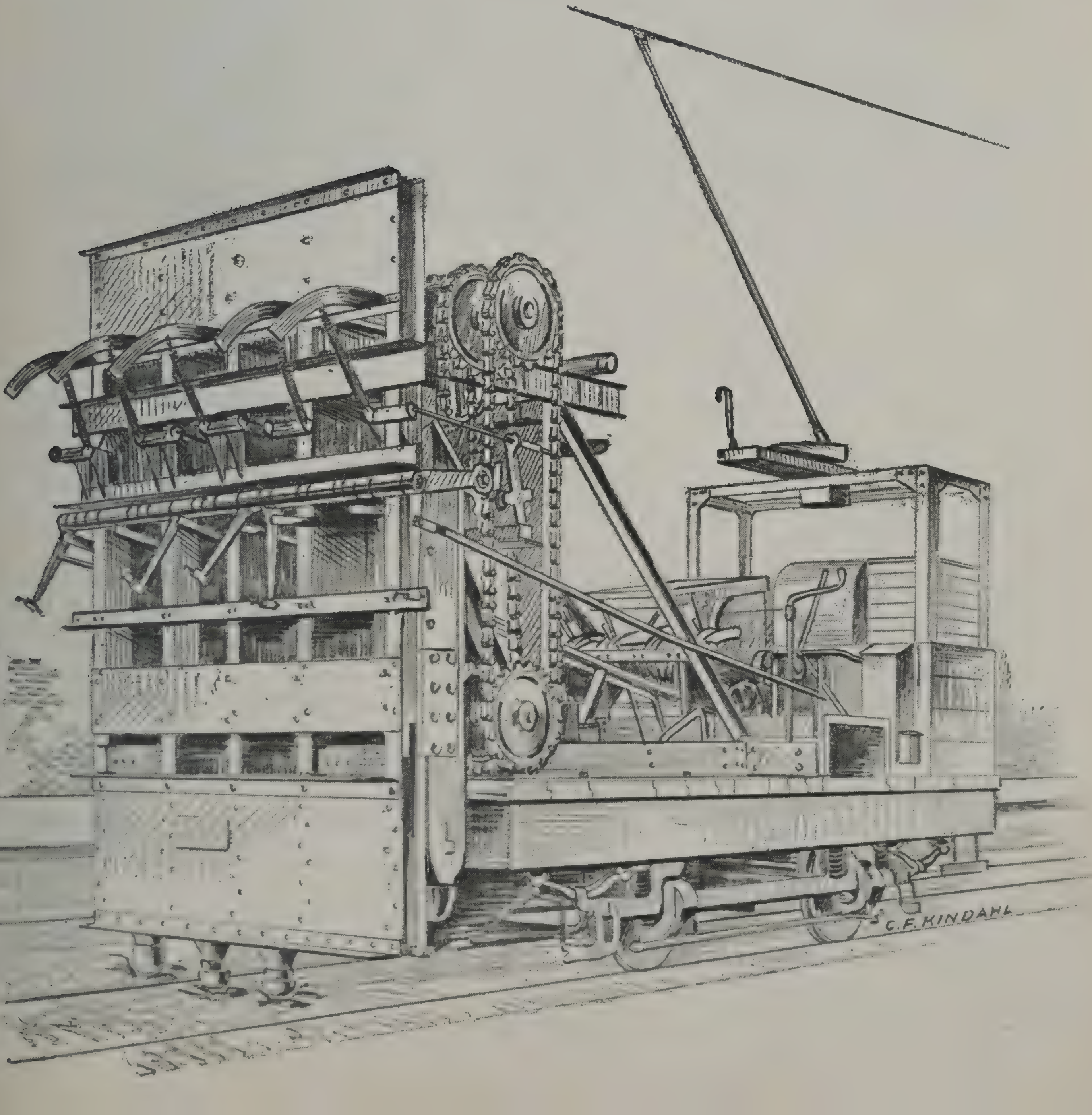


S. Bruce Black, President Liberty Mutual Ins. Co., David Y. Ross, Power Department, and General Manager Edward Dana

PROMPT FIRST AID SAVES LIFE

On March 31, 1914, a laborer by the name of Antonio Ciranie fell into the coal pocket at the Lincoln Power Station and was carried with the coal through the shute and removed therefrom, apparently dead, by Trolleyman Faceanio.

David Y. Ross, employed by the Company since 1910 as clerk, hearing of the accident ran to the scene and found the laborers endeavoring to revive Ciranie. Ross took charge of the situation, first removing considerable coal from the injured man's mouth and then administered the prone pressure method of resuscitation, applying it intelligently and successfully. Undoubtedly Ross saved Ciranie's life.

The cut was taken at the General Manager's office on July 23, 1924, at which time S. Bruce Black, President of the Liberty Mutual Insurance Co., presented Ross with the gold Life Savers' Medal issued by the Liberty Mutual Insurance Co. to those who save a life through this method.

> "To know what to do is WISDOM;
> To know how to do it is SKILL;
> To do it as it should be done is SERVICE"
> —*Commonwealther.*

COMPARATIVE DIVISION OF RECEIPTS AND EXPENDITURES FOR THE YEARS ENDING JUNE 30

	1924	1923	1922	1921	1920	1919	1918	1917
Total Receipts	$34,262,009.46	$33,612,335.20	$32,698,965.01	$34,200,286.06	$32,671,515.53	$25,226,981.50	$19,480,022.08	$19,788,953.25
Operating Expenses								
Wages	17,218,039.47	15,024,348.04	14,920,406.05	16,753,667.74	16,381,206.58	13,554,684.15	9,147,757.25	9,033,868.40
Material, supplies and other items	3,165,430.27	3,149,687.89	3,056,520.80	2,899,983.94	3,321,671.70	4,096,537.98	2,680,423.77	1,951,176.39
Injuries and Damages	789,098.53	700,740.79	476,844.02	627,629.02	627,626.48	805,353.09	817,227.18	819,705.54
Depreciation	2,250,000.00	2,004,000.00	2,004,000.00	2,004,000.00	2,004,000.00	2,004,000.00	352,670.00	330,000.00
Fuel	1,587,089.27	2,027,712.50	1,656,012.89	2,399,277.71	1,996,717.21	1,901,596.75	1,381,957.20	947,412.50
Total Operating Expenses	$25,009,657.54	$22,906,489.22	$22,113,783.76	$24,684,558.41	$24,331,221.97	$22,362,171.97	$14,380,035.40	$13,082,162.83
Taxes	1,603,269.38	1,722,707.95	1,610,096.47	1,306,736.39	1,075,496.70	941,611.50	905,032.96	984,070.55
Rent of Leased Roads	3,182,020.41	3,186,048.02	4,155,997.46	4,196,533.56	4,011,535.96	3,947,349.57	2,905,611.60	3,622,482.28
Subway and Tunnel Rents	2,060,337.09	2,025,263.33	1,974,141.07	1,947,963.20	1,591,323.98	1,491,999.54	991,551.30	995,093.45
Int. on B. E. Bonds and Notes	2,479,762.27	2,277,051.15	1,483,786.91	1,483,625.54	1,593,257.58	1,423,142.14	1,238,373.55	1,138,655.88
Miscellaneous Items	71,165.21	65,986.23	58,475.99	54,479.21	69,284.73	37,372.67	16,050.44	9,525.11
Total Cost of Service	$34,406,211.90	$32,183,545.90	$31,396,281.66	$33,673,896.31	$32,672,120.92	$30,203,647.39	$20,436,655.25	$19,831,990.10
Loss or Gain not including Profit and Loss Items	**$144,202.44**	$1,428,789.30	$1,302,683.35	$526,389.75	**$605.39**	**$4,976,665.89**	**$956,633.17**	**$43,036.85**
Profit & Loss Delayed Items	144,202.44	**314,231.48**	82,528.09	23,863.77	17,685.34	**3,485.78**		
Total Loss or Gain including Profit and Loss Items	00	$1,114,557.82	$1,385,211.44	$550,253.52	$17,079.95	**$4,980,151.67**		
Back Pay applying to May & June, 1919, but paid in October, 1919						**$435,348.46**		
Total Loss						**$5,415,500.13**		

	1916	1915	1914	1913	1912	1911	1910
Total Receipts	$18,781,327.74	$17,886,549.64	$17,785,978.25	$16,968,328.33	$16,522,542.00	$15,980,707.94	$15,245,865.48
Operating Expenses							
Wages	8,351,117.54	7,709,373.86	7,247,064.66	6,552,207.62	6,132,256.13	6,098,710.60	5,910,757.73
Material, supplies and other items	1,921,083.01	1,922,622.52	2,441,049.17	3,014,654.90	3,242,423.53	2,488,667.44	2,376,033.78
Injuries and Damages	762,351.77	722,177.00	751,331.77	750,041.39	797,436,03	694,558.61	776,588.37
Depreciation	220,000.00	62,989.65					200,000.00
Fuel	825,443.64	870,820.30	858,415.86	818,677.27	804,518.64	837,127.67	822,497.54
Total Operating Expenses	$12,079,995.96	$11,287,983.33	$11,297,861.46	$11,135,581.18	$10,976,634.33	$10,119,064.32	$10,085,877.42
Taxes	1,043,041.89	1,069,189.27	1,040,946.80	1,128,021.51	1,221,756.84	1,244,832.77	1,213,089.37
Rent of Leased Roads	3,589,774.21	3,638,655.75	3,458,171.00	3,418,287.16	3,375,523.06	3,340,262.64	3,030,168.15
Subway and Tunnel Rents	915,192.35	825,496.17	677,900.44	687,308.54	603,226.03	567,087.45	559,469.14
Interest on B. E. Bonds and Notes	1,129,677.70	1,049,785.12	1,067,900.00	1,095,506.95	837,033.33	556,000.00	556,000.00
Miscellaneous Items	13,845.90	4,587.89					
Total Cost of Service	$18,771,528.01	$17,875,697.53	$17,542,779.70	$17,464.705.34	$17,014,173.59	$15,827,247.18	$15,444,604.08
Loss or Gain	$9,799.73	$10,852.11	$243,198.55	**$496,377.01**	**$491,631.59**	$153,460.76	**$198.738.60**

WEATHER
Fair & Warmer

The Boston Evening Sunset

FINAL
EDITION

VOL. C NO. 1 MONDAY EVENING, AUGUST, 1924 TWO CENTS

BOSTON ELEVATED RAILWAY LEADS

Since 1920 Its Usefulness to District Served Greater Than Any Other Railway in This Country—Rides Annually Per Capita Increase 12% From 286 to 320

There are other street railway systems upon which the riding habit is greater than the Boston Elevated. By riding habit is meant the number of revenue rides taken by the population served per year.

Local conditions, such as density of population, physical characteristics of the city and many other factors, have always governed the differences in riding habits of various American cities. At the present time the highest riding habit exists on the street railway of Philadelphia. There the population rides 381 times on the street railway in a year.

Kansas City increased	2.20%
Chicago increased	0.70%

It is not possible to state definitely all of the reasons for such a showing. Some of the fundamental reasons are probably as follows:

1. A fare arrangment adapted to different types of use, short haul district rides and trunk line long haul rides involving also the expensive rapid transit facilities.

2. Constant improvement in service—new cars, track, and courteous personnel.

Rev. Passengers Per Capita

	1923	1920	1910	% Increase	% Decrease
Philadelphia (Surf. & Sub.)..	381.0	414.0	242.0		7.97
Providence	370.0	340.0	254.0	8.82	
San Francisco	357.0	462.0	352.0		22.73
Atlanta	341.0	386.0	290.0		11.66
Minneapolis & St. Paul......	326.0	365.0	271.0		10.69
St. Louis	325.0	329.0	300.0		1.22
Boston (Surf. & Subway)...	320.0	286.0	290.0	11.88	

Detroit	317.0	....	298.0		
Baltimore	308.0	346.0	277.0		10.98
Cleveland	300.0	365.0	291.0		17.81
Chicago	286.0	284.0	225.0	0.70	
Columbus	281.0	317.0	271.0		11.36
Omaha	280.0	376.0	282.0		25.53
Kansas City	279.0	273.0	332.0	2.20	
New Orleans	275.0	292.0	244.0		5.82
Indianapolis	268.0	306.0	271.0		12.42
Dallas	262.0	327.0	245.0		19.88
Milwaukee	261.0	287.0	232.0		9.06
Tacoma	256.0	250.0	281.0	2.40	
Des Moines	245.0	293.0	241.0		16.39
Memphis	240.0	....	....		
Cincinnati	239.0	267.0	237.0		10.49
Richmond	234.0	272.0	....		13.97
Louisville	231.0	291.0	228.0		20.62
Pittsburgh	230.0	238.0	210.0		3.36
Los Angeles	228.0	266.0	272.0		14.29
Duluth	227.0	299.0	210.0		24.08
Rochester, N. Y.	226.0	252.0	243.0		10.32
Spokane	222.0	248.0	199.0		10.48
Seattle	213.0	240.0	307.0		11.25
Buffalo	212.0	282.0	217.0		24.82
Nashville	209.0	251.0	243.0		16.73
Portland, Ore.	198.0	275.0	256.0		28.00
Salt Lake City	184.0	....	....		
Birmingham	183.0	....	....		
Toledo	181.0	195.0	....		7.18
New York (Surf. traf. only)	181.0	167.0	159.5	8.38	
Houston	180.0	213.0	248.0		15.49
Oakland	178.0	225.0	257.0		20.89
New Bedford	178.0	185.0	78.0		3.78
Norfolk	172.0	291.0	....		40.89
Syracuse	171.0	220.0	203.0		22.27
Knoxville	171.0	....	....		
Utica	168.0	208.0	179.0		19.23
New Haven, Hartford	168.0	....	164.0		
Albany-Troy	166.0	179.0	160.5		7.26
Grand Rapids	150.0	185.0	249.0		18.92
Trenton, N. J.	149.0	149.0	150.0		
Erie	148.0	164.0	96.0		9.76
San Antonio	146.5	160.0	168.0		8.44
Newark, Jersey City, Camden	119.5	150.5	151.0		20.60

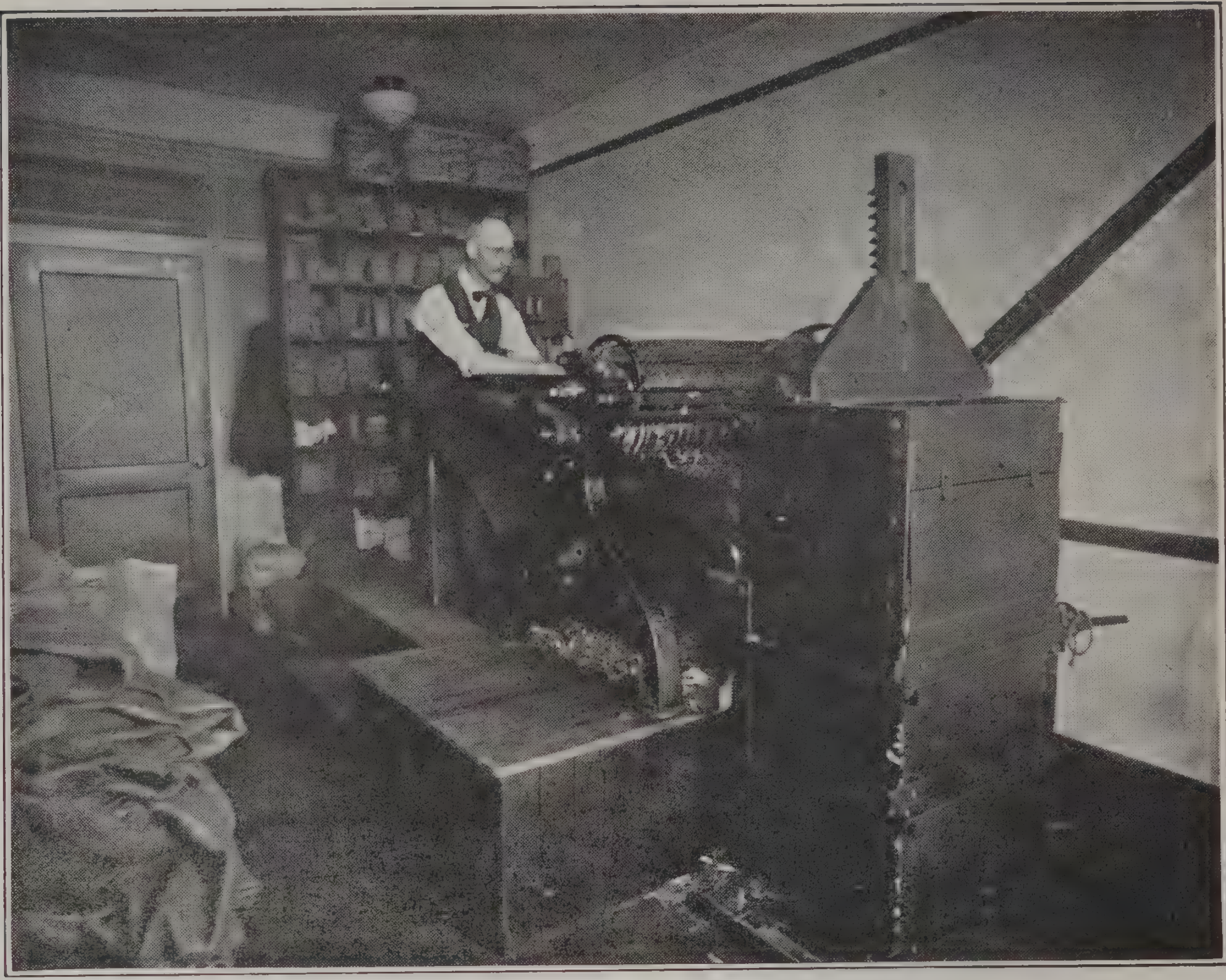
Traffic Dept., Buchanan & Layng.

Only six railways, however, increased the riding habit since 1920, all others remaining the same or decreasing, and those were:

Boston increased	11.88%
Prov., R. I. increased	8.82%
New York increased	8.38%
Tacoma increased	2.40%

3. Traffic congestion in downtown Boston, which prompts automobile owners to leave cars outside congested zone and use rapid transit lines to reach centre of city.

4. The knowledge and appreciation of the fact by the district that the Boston Elevated is a publicly operated utility which prospers most when used most by the community.



TICKET MACERATING MACHINE
Bureau of Audit

One of the functions of the Bureau of Audit is to make sure that all tickets and transfers turned in with the day's receipts are destroyed; and the manner in which the tickets and transfers are destroyed is demonstrated by the above cut which shows the ticket macerating machine.

This work is performed by Mr. Joseph W. Craig who has been in the service of the Railway for the past 34 years.

The tickets and transfers after being audited are transported to the Ticket Chopper room where they are run through the machine. They are fed on to a running belt which carries to the cutters, and the macerated paper then passes to a baling machine where it is pressed into a bale weighing approximately 200 pounds, and sold as waste paper. The average is between two and three bales per day.

This work comes under the direct supervision of a branch of the Bureau of Audit known as the Department of Revenue Accounts.

In this department there are forty female and three male employes. The work is divided under two foremen; one having charge of day card work, and the other in charge of statistical work and coasting clock records.

An interesting comparison showing the changes in this class of work at the present time, as compared with the old days when one could almost hear a pin drop in the office, and when the boss would pound on his desk at the least noise, and the present day where the grinding of two calculating machines on which one girl can grind out as much multiplication and division in one hour as two experts could accomplish by hand (and head) in one day, and the noise of six adding machines, make the office sound more like a factory where the raw material is received daily in the form of day cards, coasting clock records, and other reports, and is sent out in the form of finished statements and reports. The following are some of the reports issued: Receipts for the day; amount collected at prepayment stations, which at the present time is 60 per cent. of the total; number of 5c and 10c fares; number of free passengers; amount short or over of the individual conductor or operator, with the error stamped and explained on the back of day card so that he may note same; coasting percentage of each motorman; mileage operated for the day, divided, showing the number of miles operated by each type of car by car houses so that the efficiency of the car houses may be compared: and also show the cost to the Railway of contract for lubricating cars on mileage basis; revenue from each bus line; and mileage of each bus to show the cost to the Railway of the tires which are contracted for on a mileage basis, and numerous other reports which are very necessary in the operation of any large street railway property.

The day's work in this department is oftentimes made more difficult and complicated by the carelessness of some of the conductors and operators by their failure to note on their day cards the correct car number, or the failure to add columns, etc. It is interesting to note that a large percentage of the girls employed are daughters of conductors and motormen.

CONCRETE BREAKER

The cover design shows a concrete breaker. This machine is an electrically driven and electrically propelled unit for breaking concrete in track. Such a machine was not formerly required but due to the fact that tracks are now built with a solid concrete base it is necessary. This machine, however, will break the concrete in the track at the rate of about 125 feet of track per hour. The concrete is broken by five hammers weighing 150 lbs. each, dropping about 5½ feet. These hammers are arranged in a transverse row and run in vertical guides. Two of the hammers are outside of the track, as the paving on either side of the track also has to be removed to permit rebuilding the track. They are elevated by sprocket chains and when they reach a pre-determined point drop with a pile driver action, breaking and shattering the concrete so that it can be handled either by hand labor or loaded into trucks by power shovel. Each hammer is controlled by a lever and any hammer may be put into action or held suspended at will by the operator.

It would require a much longer time to perform the work without the use of such a piece of apparatus.

OUR G. A. R. HONOR ROLL

Leopold Kirchgassner—Pensioner. Ex-Woodworker, Bartlett St. Shops.

George D. Coburn—Pensioner. Ex-Painter, Bartlett St. Shops.

Augustus F. Emery—Pensioner. Ex-Mechanic, Bartlett St. Shops.

Frederick Sanderson—Pensioner. Ex-Motorman, Division 4.

John A. Dickason—Pensioner. Ex-Crossing Tender Division 4.

William T. Burton—Pensioner. Ex-Gateman, Rapid Transit Lines.

Henry P. Wheeler—Pensioner. Ex-Receiver, Division 3.

ALWAYS BE CAREFUL

On May 26, 1924, a card was posted showing the number of Elevated employes killed for the years 1921, 1922 and 1923, and called attention to the fact that thus far in the industrial accident year of 1924 no death had occurred. All were urged to take extreme care and not get killed. By this was meant to take no chances of getting killed by violating rules and orders promulgated for the very purpose of preventing serious injury or death.

The first death case has occurred. At Milton carhouse an employe, unmindful of two cardinal safety rules, lost both legs and died in the hospital the following day.

In addition to the card notice posted on May 26th, employes at this carhouse were cautioned, as is the usual practice, and the safety rules emphasized on the third of July, 1924. On the 12th of July, this employe was killed through carelessness.

These warning notices are posted in the interest of the men themselves. Had the efforts to warn been heeded a human life would have been saved.

JUNE OPERATION

	1924	1923
Revenue exceeded cost of service........		37,606.43
Revenue failed to meet cost of service	94,897.90	
Ratio operating expense to operating revenue	73.69%	70.54%
Operating revenue per car mile operated	57.72c	60.62c
Operating revenue per car hour (A. E. R. A. Standard)	$5.49	$5.64
Revenue passengers	30,454,772	30,992,291
% 5c fare passengers........	27.07	25.59
Average fare per revenue passenger	8.645c	8.719c
Revenue passengers per car mile operated	6.571	6.845
Car miles operated........	4,643,283	4,536,767
Trips operated	585,859	543,829
Employes complained of by car riders	125	71
Complaints in regard to car service..	1	13
Average number of witnesses per accident	3.49	3.52
D. C. K. W. output gross for month	17,950,075	17,863,680
Maximum K.W. hour load........	62,080	58,925
Tons of coal consumed........	15,710	19,905
Lbs. of coal burned per K.W.D.C. at cars	1.966	2.503
Revenue passengers carried per accident	33,392	33,871
Accidents per 10,000 car miles........	1.96	2.01
Car defects per 10,000 car miles........	6.1	9.7

EDWARD DANA, *General Manager.*

August 9, 1924.

Vol. 3 SEPTEMBER, 1924 No. 9

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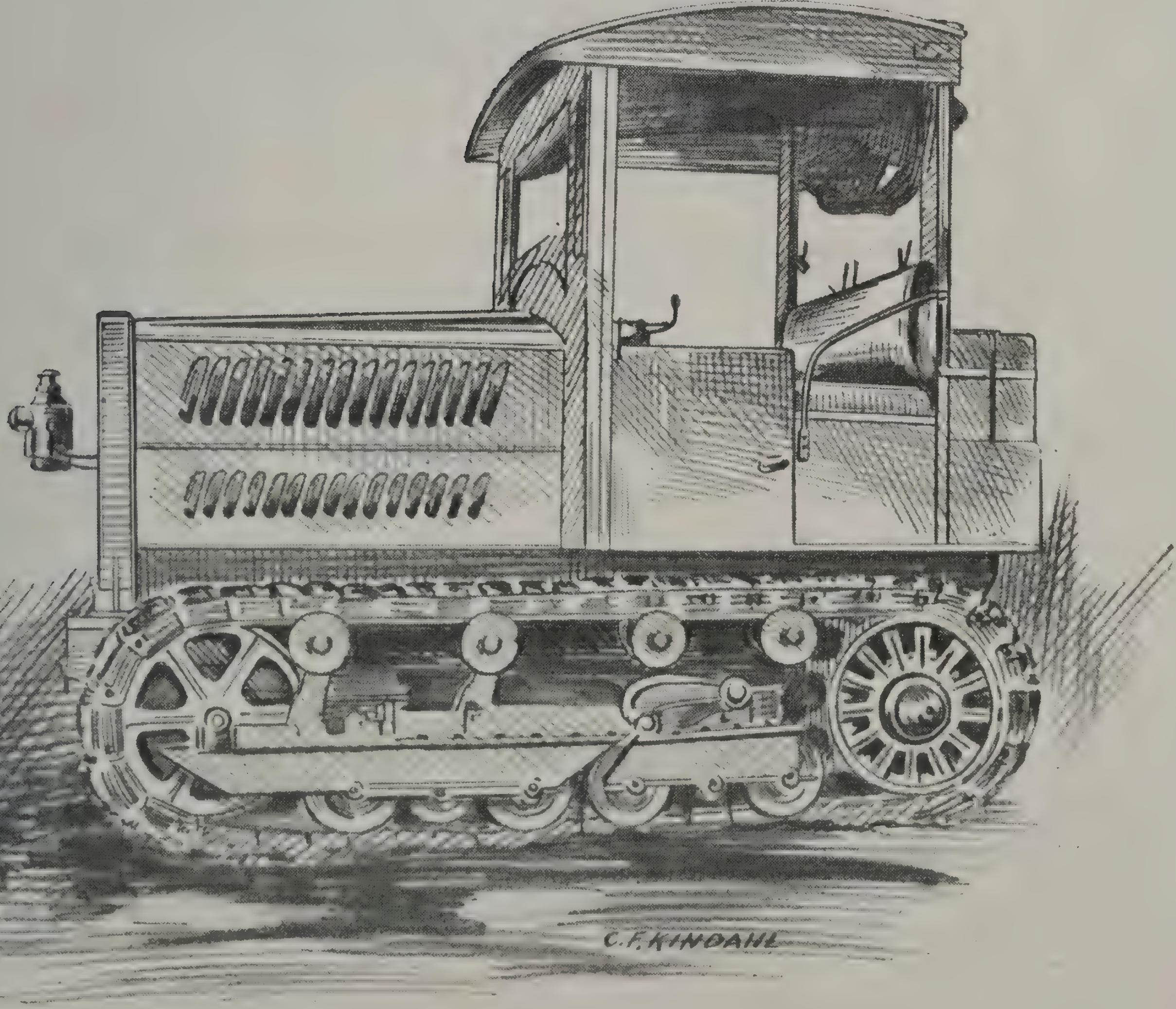
Jan. 7, [illegible]

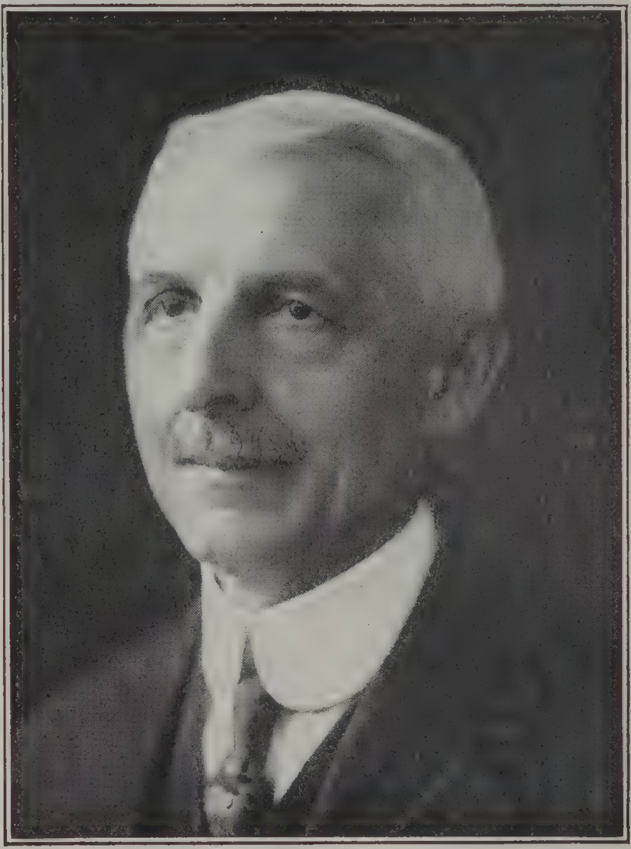
PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

CO-OPERATION

SERVICE
SAFE FOR THE CAR RIDERS SURE
SATISFACTORY





CLARENCE E. LEARNED

MARCH 5, 1858 AUGUST 27, 1924

Our organization feels the loss of Clarence E. Learned, known to so many for so many years. His was a vigorous, active life and while called upon to perform many difficult tasks, he always was endowed with a deep human sympathy which those who knew him best fully appreciated. That his necessary close contact with the labor organizations, with whom we have agreements, in no way affected their respect and esteem for him was evidenced by the delegation who with bowed heads attended the services on Saturday, August 30th.

He was born on March 5, 1858, in South Boston; educated in the South Boston and South End grammar schools. From 1876 to 1888 he was engaged in a banking house, a grain concern, as Traveling Passenger Agent for the Boston & Hingham Steamboat Company, and on the staff of the Boston Herald. In 1888 he came with the West End Street Railway Company, and in 1897 he became Superintendent of Inspection of the Boston Elevated—a period of 36 years in railway service.

YOUR WATCH

About 175 pieces of material enter into the construction of a watch.

Some 2400 separate operations are included in the manufacture of a watch.

The power that moves a watch is equivalent to only four times the force exerted in a flea's jump.

One horse-power would suffice to operate 270,000,000 watches.

The jewel roller of the watch makes 432,000 impacts against the fork each day or 157,680,000 blows during the course of a year. This amounts to some 3,153,600,000 blows during the space of 20 years, the period for which a good watch is usually guaranteed to keep correct time.

The balance wheel is moved 1 43/100ths inches with each vibration or 3558¾ miles continuously in one year.

Heat causes parts to expand and watch will lose time.

Cold causes contraction of the metals used in construction of a watch. Therefore watches should not be placed on a cold surface (such as marble shelf at night) which would result in the watch either gaining or losing.

A compensating balance is made of both kinds of metals, so that the contraction of one may balance the expansion of the other.

A watch should never be laid horizontally at night, but should be hung up on a nail; change of position will cause it to gain or lose.

If the delicate hairspring catches in the hairspring stud or in the regulating pin, a slight jolt of the watch will restore it to the correct position.

Should be in the same position day and night.

Should be oiled every eighteen months.

Never attempt to oil watch—let a watchmaker do it.—Washington Star.

CONSTANT EDUCATION

It is a modern error that education exists for the individual. Education exists for the community and the race; it exists to subdue the individual for the good of the world and his own ultimate happiness.

The idea has already been broached that men and women in the modern community are no longer inclined to consider themselves as ever completely adult and finished; there is a growing disposition and a growing necessity to keep on learning throughout life. In the worlds of research, of literature and art and economic enterprise, that adult learning takes highly specialized forms which I will not discuss now; but in the general modern community the process of continuing education after the college stage is still evidently only at a primitive level of development.

IMPORTANCE OF RAILWAYS

The growth of the United States is a process that has no precedent in the world's history; it is a new kind of occurrence. Such a community could not have come into existence before, and if it had it would, without railways, have certainly dropped to pieces long before now. Without railways or telegraph it would be far easier to administer California from Pekin than from Washington. The man of San Francisco is more like the man of New York today than the man of Virginia was like the man of New England a century ago. And the process of assimilation goes on unimpeded. The United States is being woven by railway, by telegraph, more and more into one vast human unity, speaking, thinking, and acting harmoniously with itself. Soon aviation will be helping in the work.

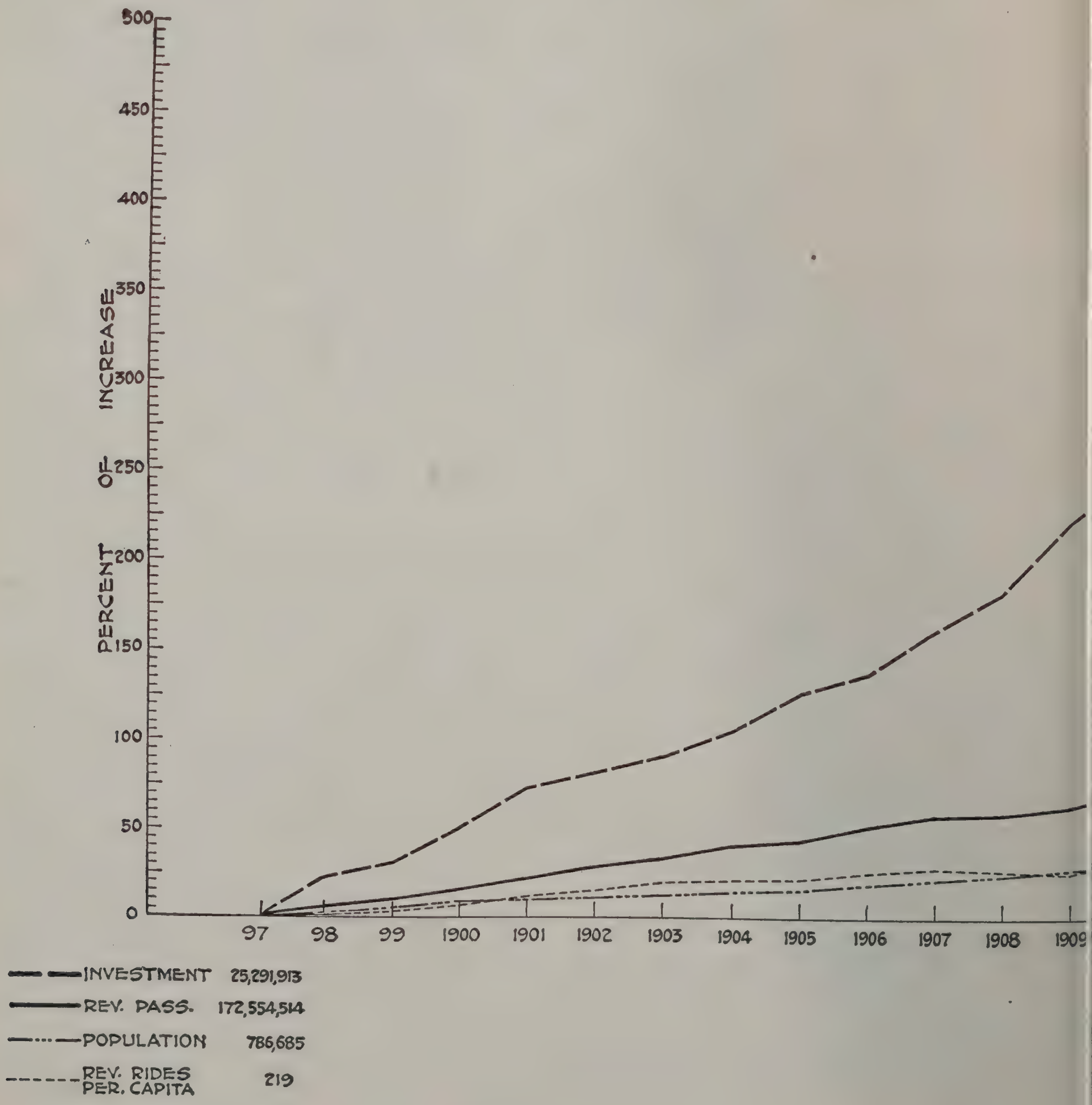
H. G. WELLS—*"Salvaging of Civilization."*

In the period from 1897 to 1924 the population served by the "L" has increased 52%, the revenue passengers carried annually have increased 121% and the investment in the physical plant, which makes possible the service of today, has increased 489%. The unit price of the service in money has increased 72%, but in reality the average fare of 8.6c purchases a greater transportation value than the 72% increase indicates, for the 5c fare paid in 1897 secured less speed, shorter distance, and more infrequent service than the 8.6c fare does today.

Since 1918 the plant has been increased from $120,819,008 to $149,001,108 or an amount greater by $2,890,187 than the value of the entire plant in 1897.

The interest or carrying charge on the plant in 1897 amounted to $1,690,155 per year or .979 cents per revenue passenger carried, whereas today it is $7,596,188 per year or 1.987c per revenue passenger carried.

These are startling facts and have an important bearing upon

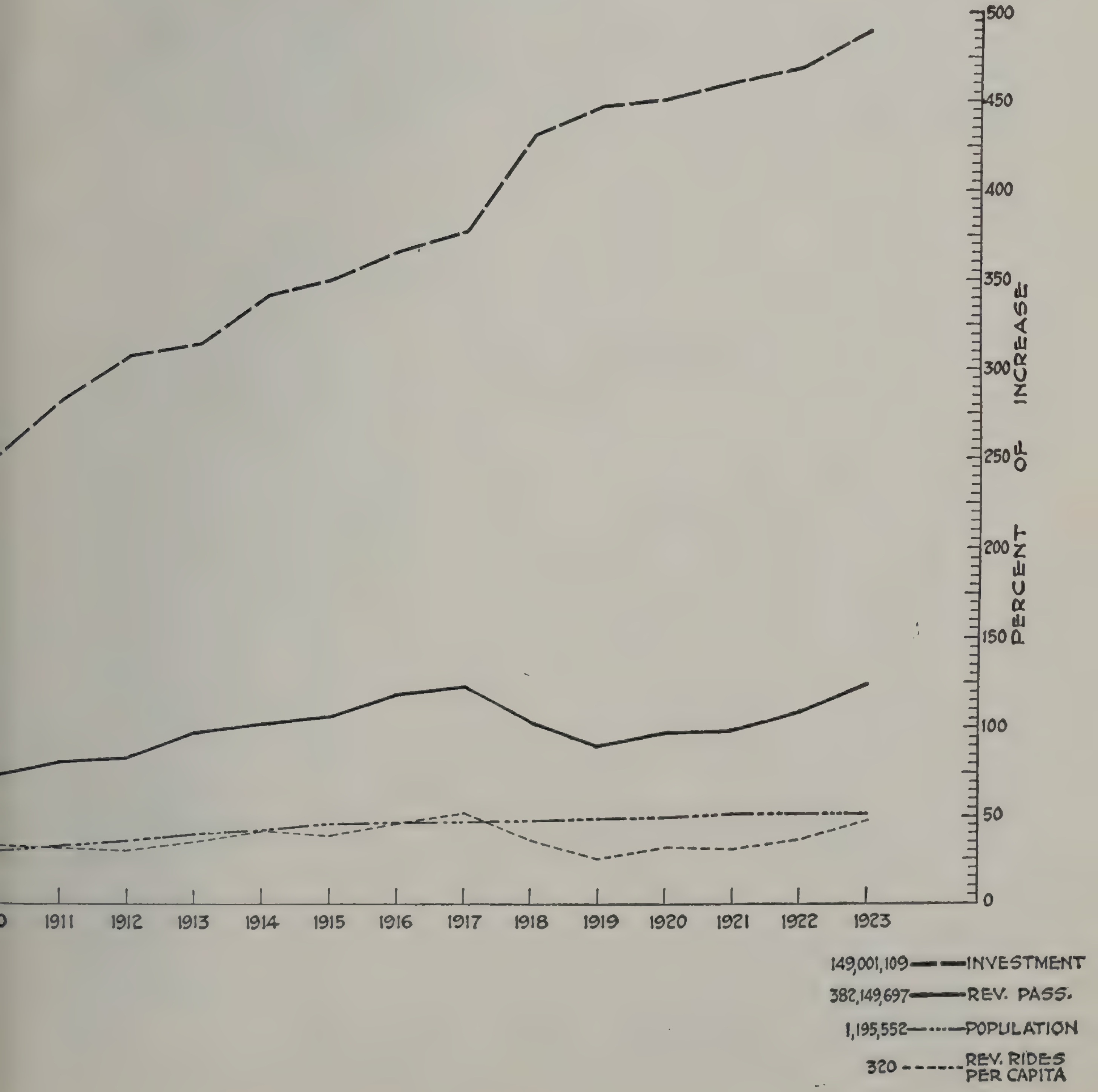


the future. If the improvements and additions which are frequently suggested are to become realities without increasing the car fare then the population served will need to ride more each year and every operating economy that can be devised will need to be practiced.

The population served—1,195,552—rides 320 times annually. If they rode 372 times per year, slightly more than one ride per day, the revenue would be increased approximately $5,400,000 and this sum would meet the carrying charges on the enlarged facilities and improved service which will be required in 1930 at the present ratio of increase.

INVESTMENT IN PHYSICAL PLANT

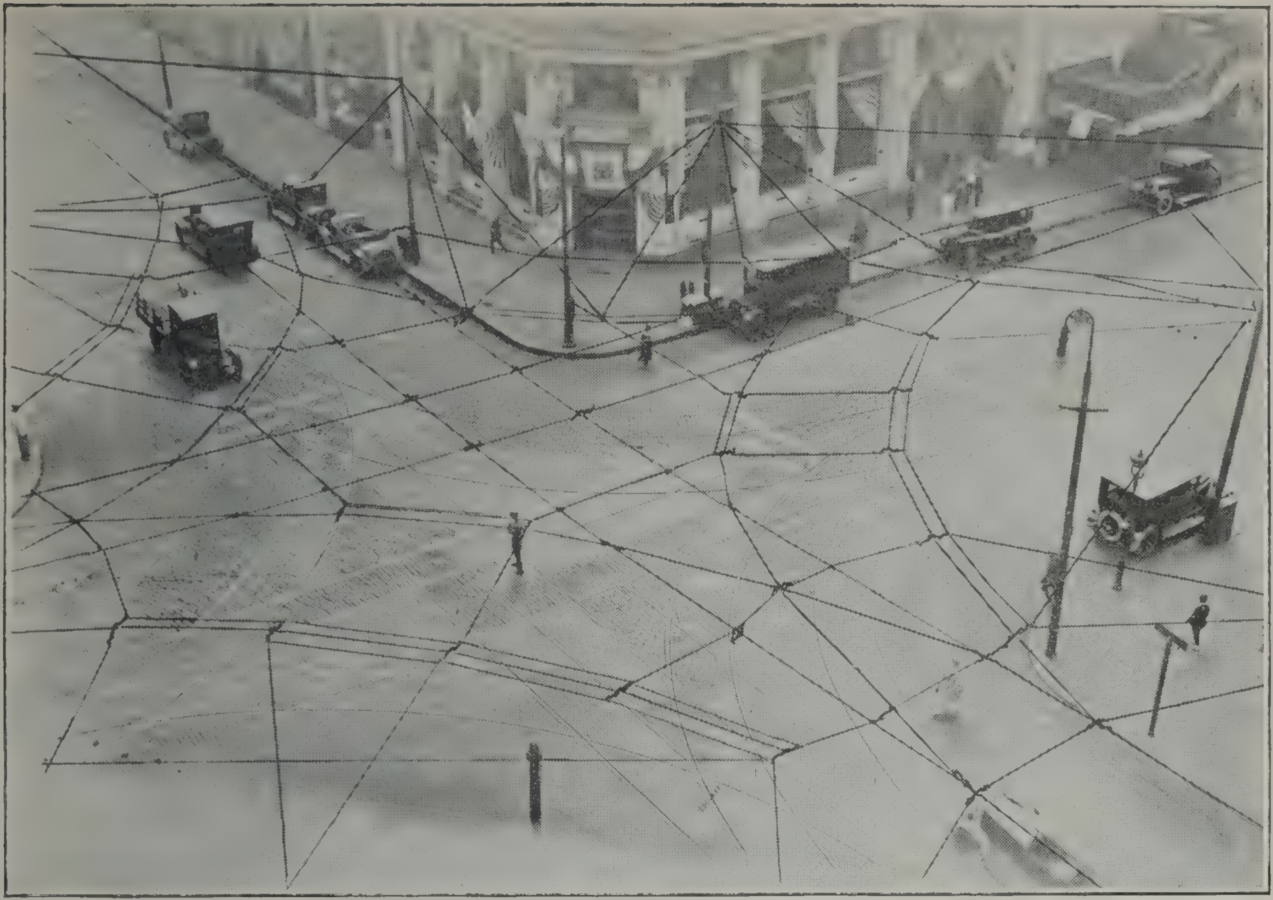
	1897 Millions	1924 Millions
Tracks, including stations and structures, right of way, etc.	6¼	48½
Cars and other rolling stock	6½	22½
Power stations and transmission system	5¾	22½
Carhouses, shops, stables and miscl. bldgs.	6½	10
Subways and tunnels owned by city or state..	...	44½



Year	Plant Investment	Rev. Pass.	Population	Rev. Rides Per Capita
1897	$25,291,913.22	172,554,514	786,685	219
1898	31,251,811.90	181,321,295	808,291	224
1898	31,251,811.90	181,321,295	808,292	224
1899	33,187,250.79	191,023,224	829,897	230
1900	37,793,501.62	201,124,710	851,506	236
1901	44,087,939.53	213,703,983	864,821	247
1902	46,466,591.31	222,484,811	878,136	253
1903	48,398,610.91	233,563,578	891,451	262
1904	51,886,524.39	241,681,945	904,766	267
1905	57,187,809.61	246,941,776	918,081	269
1906	59,873,910.46	262,267,240	940,473	279
1907	65,979,896.07	271,084,815	962,865	282
1908	70,957,716.76	273,132,584	985,258	277
1909	81,592,634.49	281,008,471	1.007,651	278
1910	88,827,576.35	298,507,787	1,030,044	288
1911	97,790,695.02	309,499,311	1,050,555	290
1912	103,481,555.44	312,549,337	1,073,066	289
1913	105,316,269.25	336,927,435	1,094,578	298
1914	112,180,800.27	345,973,673	1,116,090	307
1915	113,908,001.78	352,469,586	1,137,602	304
1916	118,088,033.93	373,577,908	1,144,846	317
1917	120,819,008.57	381,017,338	1,152,090	330
1918	134,154,737.85	348,664,700	1,159,334	300
1919	138,091,638.88	324,758,685	1,166,578	278
1920	139,156,058.00	335,526,561	1,173,820	286
1921	141,345,133.42	337,252,080	1,181,064	286
1922	143,789,647.75	356,593,942	1,188,308	300
1923	149,001,108.85	382,149,697	1,195,552	320

THE PROBLEM AHEAD

On July 1, 1923, the Reserve Fund as required by law was intact		$1,000,000.00
July, 1923, deficit of	$285,004.74	
August, 1923, deficit of	319,516.56	
September, 1923, deficit of	251,688.05	
October, 1923, surplus of	15,830.84	
November, 1923, surplus of	83,410.50	
December, 1923, surplus of	374,464.85	
January, 1924, surplus of	125,758.50	
February, 1924, surplus of	19,247.66	
March, 1924, surplus of	75,777.79	
April, 1924, surplus of	16,404.23	
May, 1924, surplus of	96,010.44	
June, 1924, deficit of	94,897.90	855,797.56
Profit and Loss Items, Cr.		$144,202.44
Reserve Fund, July 1, 1924		$1,000,000.00
On July 1, 1924, the Reserve Fund as required by law was intact		$1,000,000.00
July, 1924, deficit of	$353,245.79	
August, 1924, deficit of	$445,820.47	



TROLLEY WIRE SPECIAL WORK

TROLLEY WIRE SPECIAL WORK

The above cut shows an unusual view of the complication of trolley wire special work at a four-way intersection. The value of this single piece of construction is $2,000.00 and requires 950 man hours to install. Visualize 118 men working an eight-hour day required to install this work. There are 1216 trolley movements daily or 422,000 annually through this network of wires.

The following parts are required in its construction:

8	poles	No. 4
8	hoods	No. 4 pole
12	clamps	No. 2 pole
1900	ft. wire	2/0 trolley
360	ft. wire	5/16″ Galv. iron
3300	ft. wire	No. 6 Galv. iron
15	frogs	
15	hangers	Frog
46	hangers	Round top
30	pulloffs	Double
10	crossovers	23° rigid
6	crossovers	60° 90° Adj.
6	plates	Frog guard
5	ears	2/0 splice
81	ears	Deep groove
72	insulators	Wood strain
35	insulators	X porcelain
8	signs	N. C.

AS IT WAS OF OLD

TRACTORS

The cover design shows a five-ton four-cylinder gasoline driven tractor, mounted on caterpillar tread, with a capacity of 40 horsepower. It is 124 inches long, 63 inches wide and 64 inches high, exclusive of cab, and has a ground pressure of approximately four pounds per square inch. It has a minimum speed of 1½ miles per hour and a maximum speed of 5.7 miles per hour. When in reverse, it will go at the rate of one mile per hour. It is equipped with an adjustable drawbar.

In the summer season the Maintenance Department uses eight tractors, in connection with its maintenance and construction, such as hauling, plowing and other heavy work, formerly requiring many horses and much manual labor. In the winter these tractors are used to good advantage hauling snow equipment. Tractors have proved to be efficient and economical.

SCHOOL DAYS

The schools will open soon. Watch out for the children. Some little ones just beginning their studies are not careful at street crossings.

Think of their safety all the time.

NEW ENGLAND WEEK, SEPT. 15 to 20

JULY OPERATION

	1924	1923
Cost of service exceeded revenue........	$353,245.79	$285,004.72
Ratio operating expense to operating revenue	82.44%	81.40%
Operating revenue per car mile operated	54.45c	55.72c
Operating revenue per car hour (A. E. R. A. Standard)	$5.19	$5.04
Revenue passengers	28,763,956	28,486,610
% 5c fare passengers	26.76	25.75
Average fare per revenue passenger	8.633c	8.711c
Revenue passengers per car mile operated	6.195	6.283
Car miles operated	4,652,309	4,543,551
Trips operated	593,664	549,048
Employes complained of by car riders	94	70
Complaints in regard to car service..	8	3
Average number of witnesses per accident	3.5	3.5
D. C. K. W. output gross for month	17,690,920	17,698,630
Maximum K.W. hour load..........	58,080	55,700
Tons of coal consumed	15,403	17,349
Lbs. of coal burned per K.W.D.C. at cars	1.956	2.202
Revenue passengers carried per accident	40,061	38,547
Accidents per 10,000 car miles..........	1.54	1.62
Car defects per 10,000 car miles........	6.2	9.3

EDWARD DANA, *General Manager.*

September 12, 1924.

Vol. 3 OCTOBER, 1924 No. 10

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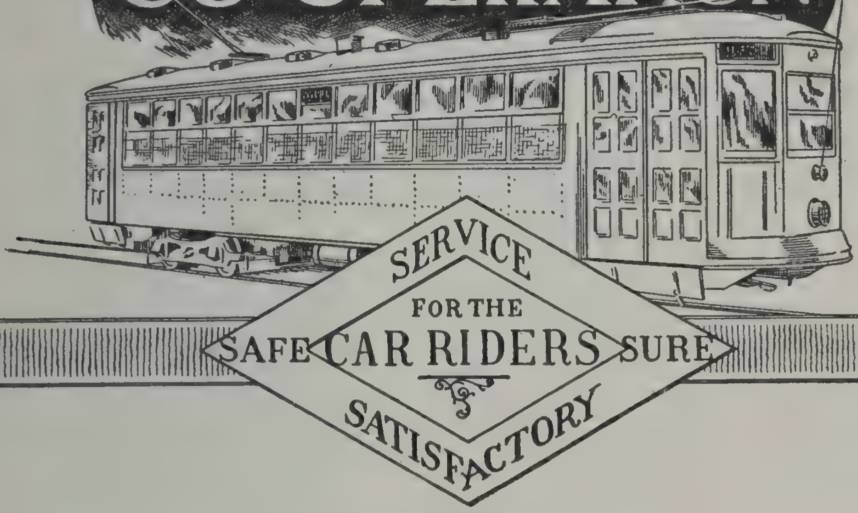
PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

Jan. 7, 1936

CO-OPERATION



RECEIPTS AND EXPENDITURES PER REVENUE PASSENGER FOR THE YEARS ENDING JUNE 30th

	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924
Total Receipts	5.219	5.238	5.325	5.199	5.183	5.165	5.167	5.212	5.174	7.612	10.083	10.144	9.487	8.995	8.870
Labor	2.024	1.999	1.976	2.008	2.112	2.226	2.297	2.379	2.430	4.091	5.053	4.966	4.318	4.021	4.458
Materials and Supplies	.813	.816	1.045	.924	.711	.555	.529	.514	.712	1.236	1.025	.860	.885	.842	.819
Injuries and Damages	.266	.228	.257	.229	.219	.209	.210	.216	.218	.243	.194	.186	.138	.188	.204
Depreciation	.068					.018	.061	.087	.093	.605	.618	.594	.580	.536	.583
Fuel	.282	.274	.259	.251	.250	.251	.226	.250	.367	.574	.615	.711	.479	.543	.411
Total Operating Expenses	3.453	3.317	3.537	3.412	3.292	3.259	3.323	3.446	3.820	6.749	7.505	7.317	6.400	6.130	6.475
Taxes	.415	.408	.394	.346	.303	.309	.287	.259	.240	.284	.332	.387	.466	.461	.415
Rent on Leased Roads & Dividends	1.037	1.094	1.088	1.047	1.008	1.051	.987	.954	.677	1.192	1.237	1.244	1.203	.852	.823
Subway and Tunnel Rents	.192	.186	.194	.210	.198	.238	.252	.262	.263	.450	.491	.577	.571	.542	.533
Interest on B. E. Bonds and Notes	.190	.183	.270	.336	.311	.304	.311	.300	.329	.430	.491	.440	.429	.610	.643
Miscellaneous Items						.001	.004	.003	.004	.011	.022	.016	.017	.018	.018
Excess		.050			.071	.003	.003				.005	.163	.401	.382	
Deficit	**.068**		**.158**	**.152**				**.012**	**.159**	**1.504**					**.037**
Back Pay										**.131**					
Total Deficit										**1.635**					

Blackface figures in tabulation indicate deficit.

R. C. Bush, Hon. R. A. Sears, Wm. Devine, General Manager E. Dana, H. M. Steward.

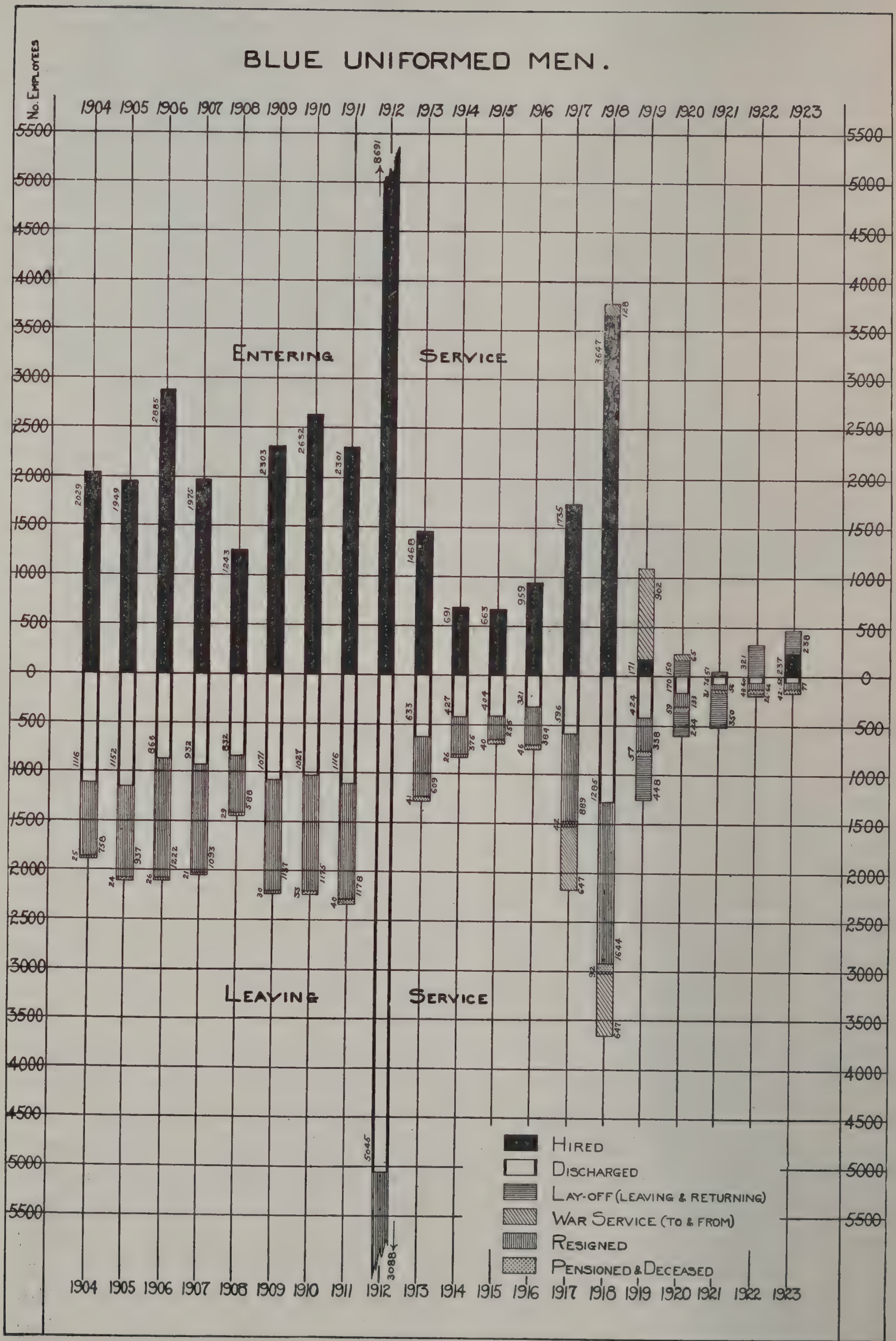
PROMPT FIRST AID AGAIN SUCCESSFUL

The above photograph was taken Sept. 26, 1924, at the General Manager's Office at which time William Devine, Track Foreman, Rapid Transit Lines, was presented a gold watch by the president of the Transit Mutual Insurance Co. for rescuing Joseph F. McCarthy, Guard 01, from a perilous position and undoubtedly saving his life.

On August 29, 1924, Guard McCarthy opened one of the side doors on a moving train while trying to locate a defect and while leaning out through the doorway struck his head against a signal mast near the Everett drawbridge and fell from the train.

Foreman Devine was working with his crew at Sullivan Sq. Yard, heard that something was wrong, and with two of his crew ran to the scene of the accident where they found McCarthy lying unconscious across the third rail and the running rail, badly burned and shocked. They removed McCarthy from this position and Devine immediately applied the prone pressure method of resuscitation. After more than fifteen minutes' effort McCarthy was revived.

Mr. Devine has been in the service of this railway since 1901 and on one other occasion probably saved the life of a man by using the same method of resuscitation. These occurrences indicate the necessity of every employe being acquainted with a method of prone pressure artificial respiration.



BLUE UNIFORMED MEN.

NOTEWORTHY CHANGE IN PLATFORM MEN ENTERING AND LEAVING SERVICE

The cut on the opposite page shows the blue uniform men entering and leaving service since the year 1904 and indicates the great change which has taken place during this period of years.

During the year 1923 only 237 new men entered the service and these were the first men since the year 1919, as no men entered the service during the years 1920, 1921 and 1922. The following tabulation shows the changes occurring on a number of railways in this country during the year ending June 30, 1924:

HOW FARES RANGE

The national fare range on street railways of the United States is from 5 to 10 cents. A total of 173 cities have a 7-cent fare, 150 a 10-cent fare, 83 a 6-cent fare and 52 a 5-cent fare.

Most of the 5-cent fare cities are small, and many of them do not have city-wide service. The 5-cent fare is charged by interurban lines for rides within city limits.

Other fares charged in this group are: 10-cent zone fares, 4; 9-cent cash fares, 4; 8-cent cash fare, 1-cent transfer charge, 26; 8-cent zones, 5; 7-cent zones, 9; 7-cent zones, city, 8-cent, outside, 4; 6-cent zones, 6; 6-cent city zone, 6-cent outside zone and 2 cents transfer charge, 10; 25-cent fare zones, 2; 5-cent fare and a transfer charge, 5; 5-cent city zone and 5-cent outside, 15.

Name of Company	Motormen, Conductors and Operators	New Men Hired and Placed in Service	Per. Cent.
Indianapolis St. Ry., Indiana	1,053	896	85
Virginia Ry. & Pr. Co., Richmond	914	719	79
Community Trac. Co., Toledo, Ohio	634	475	75
Los Angeles Ry. Corp	2,662	1,778	67
Public Service Ry., New Jersey	3,746	2,466	66
New York State Rys. (Syracuse)	375	187	50
Louisville Ry Co., Kentucky	900	431	48
United Rys. & Elec. Co. of Baltimore	3,023	1,430	47
Market St. Ry Co	1,950	897	46
Memphis Street Ry.	581	230	40
Omaha & Council Bluffs St. Ry	806	314	39
Denver Tramway Co.	820	287	35
Cincinnati Traction Co.	1,522	497	33
San Francisco-Oakland Term. Rys	1,200	400	33
New York State Rys. (Rochester)	887	283	32
Dallas Ry. Co.	580	177	31
Capital Tract. Co. (Dist. of Col.)	811	223	28
Dept. of St. Rys., Detroit	3,687	1,019	28
Milwaukee Elec. Ry. Co	1,610	382	24
Kansas City Rys.	1,805	416	23
Georgia Ry. & Power Co	1,134	264	23
New Orleans Public Service	1,283	289	22
Birmingham Ry. & Lt. Co	660	140	21
Chicago Surface Lines	12,095	2,370	20
Cleveland Ry. Co.	2,900	586	20
Connecticut Co.	1,997	342	17
United Rys. of St. Louis	3,744	616	16
Seattle Municipal St. Ry.	1,253	185	15
Philadelphia R. T. Co.	6,172	898	15
Pittsburg Rys. Co.	3,330	394	12
Eastern Mass. St. Ry.	1,098	99	9
Twin City R. T., Minneapolis	2,200	196	9
Boston Elevated Ry.	4,182	243	6

Equipment Room, Instruction School

OUR NEW INSTRUCTION SCHOOL

The new Instruction School at Sullivan Square combines both surface and elevated instruction facilities and provides probably as up-to-date equipment as may be found anywhere in this country.

On May 1st, 1912, an Instruction Department was organized with headquarters at the Instruction School located at Bartlett Street Shops. The school room occupied about 2,500 feet of floor space with two rooms, one for the instruction of Conductors and the other for the Motormen. The equipment used for the instruction of Motormen consisted of Types M, K, and H.L. controls with automatic and straight air brakes. An Instruction Room was also maintained for the instruction of elevated men at Sullivan Square Station, which consisted of a Type M control with an automatic air brake.

In 1917 two more rooms were added to the School at Bartlett Street.

In 1924 an Instruction School was built at Sullivan Square Terminal and on May 27th the Instruction Department moved to its new quarters. The new school consists of about 7,000 feet of floor space and an equipment room where instructions are given to motormen and operators.

The equipment in this room consists of the following types of controls and brakes:

Re-generative braking demonstration board unit.

No. 1 elevated car unit with Type M control and Type A.M.M.E. brake equipment, operating a Light demonstration board and two railway motors.

No. 8 elevated car unit with Type A.L.F.M. control and Type A.L.M.E. brake equipments, operating two railway motors.

No. 1 East Boston Tunnel car unit with A.M.M.E. brake equipment.

No. 2 Semi car unit with Type

M control and Type A.M.M. brake equipments operating two fan motors.

No. 5 Semi car unit with Type K-71-A control and Type S.M.-3 brake equipment operating four fan motors.

No. 4, 4a, and 4a-3 Semi car units with Type H.L. Control and Type S.M.E. brake equipments, operating four railway motors.

No. 1, 1a and 1b Centre Entrance car unit with Type P.C.-5 control and Type S.M.E.E. brake equipment operating four railway motors.

No. 1, 1a and 1b Centre Entrance car unit with Type S.M.E.E. brake equipment.

Birney Safety car unit with Type K-63 control.

The equipment room is also provided with a moving picture outfit and a radio receiving set with three loud speakers.

The seating capacity of the equipment room is about four hundred and fifty.

DO YOU KNOW THE ANSWERS?

The following questions were contained in final examination of the Class in Economics conducted during the last year:

1. If you have seen the new Everett car shops, what were your impressions of them?
2. Do you know how many revenue passengers were carried in the year 1923 on the Boston Elevated and how many were 5-cent passengers?
3. Does the population served by the Elevated ride more or less annually per capita than it did a few years ago when there were fewer automobiles, a 5-cent fare and open cars?
4. The subways and tunnels in which our cars or trains operate cost $44,466,643.82. Can you explain who pays for them?
5. If we needed 100 additional elevated cars to handle increased traffic, do you understand they could be paid for out of car fares?
6. Explain as you remember them the features of the East Boston Tunnel car.
7. Approximately what proportion of our A.C. high tension wires are underground and overhead?
8. Which requires the most electricity, the heating or lighting of our cars?

The answers will be published in next month's Bulletin.

The wastage of coal annually in this country is more than enough to meet the entire fuel requirements of all gas and electric utility companies in the United States for about three years, or to keep all the railroads in the country running for nearly eight months, or to keep every fire burning for about three years.

Smiles beget good nature,
And good nature begets friends,
And friends are better than a fortune.

SUGGESTION FROM AN EMPLOYE

An employe states that a recent special article in the Bulletin he thought would be of interest to the family and upon taking it home found that the family was very much interested not only in the special article but the entire Bulletin, and he makes the suggestion that possibly other employes may find the members of their families would be interested in keeping in touch with the system in this way.

BOWLING LEAGUE

Sixteen teams lined up for the fray, scheduled to take place during the next 30 consecutive Tuesday evenings at the Huntington Club Alleys on October 7, 1924.

Let the spirit of good fellowship rule and may the best team win.

NEW FOREST HILLS LOBBY

Work has been started on a new lobby for uniformed men at the Forest Hills carhouse, which will fill a long-felt want, and is a part of the general development planned at this station. The building will be constructed of concrete and brick, with a slate roof, and will present a pleasing appearance from the Arborway.

The building covers an area of 3,684 square feet, and is of one story, with basement. The first story contains lobby for the men, station masters' office, room for money counting, receiver's office and toilets. The basement contains locker room, shower baths, record storage and heating plant.

Recreation will be provided for the men by the construction of a handball court located conveniently to the lobby, and checker tables will be furnished for games in the lobby. The interior of the building will be finished in hard wall plaster, with sanitary metal trim, with rubber flooring in the lobby room, and concrete floors in the remainder of the building. In designing the interior every effort was made to make it possible to keep the room wholesome and attractive in appearance at all times.

The building, with the handball court, including the required grading around the building, will involve an expense of approximately $60,000.00, and it will compare favorably with the best lobbies provided anywhere in the country for the use of the uniformed men.

The cover design gives a good idea of what the new lobby building will look like when it is completed.

AUGUST OPERATION

	1924	1923
Cost of service exceeded revenue......	$445,820.47	$319,516.56
Ratio operating expense to operating revenue	85.76%	82.37%
Operating revenue per car mile operated	53.41c	54.76c
Operating revenue per car hour (A. E. R. A. Standard)......................	$5.09	$4.93
Revenue passengers	27,640,267	28,086.112
% 5c fare passengers......................	27.04	25.50
Average fare per revenue passenger	8.640c	8.713c
Revenue passengers per car mile operated	6.073	6.178
Car miles operated	4,561,875	4,555,198
Trips operated	584,134	550,711
Employes complained of by car riders	93	83
Complaints in regard to car service...	8	7
Average number of witnesses per accident	3.77	3.77
D. C. K. W. output gross for month..	17,297,190	17,679,430
Maximum K.W. hour load................	55,520	56,215
Tons of coal consumed	14,895	17,129
Lbs. of coal burned per K.W.D.C. at cars	1.934	2.177
Revenue passengers carried per accident	40,000	38,797
Accidents per 10,000 car miles..........	1.51	1.59
Car defects per 10,000 car miles........	6.8	7.8

EDWARD DANA, *General Manager.*

October 16, 1924.

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Vol. 3 NOVEMBER, 1924 No. 11

PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

CO-OPERATION

A LUMP OF COAL

In its power plants the Boston Elevated Railway uses bituminous coal from the Pocahontas or the Blue River region in West Virginia. A pound lump of this coal is about as large as a medium-sized apple. Held in the hand, such a lump looks dead, inert. But it contains enough energy to lift it more than 4,000 miles! Allowance is made in this statement for the fact that the force of gravitation becomes weaker as a body is lifted away from the earth. If this energy could all be converted into electrical form, it would propel a Boston Elevated safety car three miles or more, allowing for the usual number of stops and starts.

Now where does this energy reside in the coal? It is stored chemically in the carbon and hydrogen; the combustible materials which make up over 90 per cent. of the lump. This storage required ages of time and great heat and pressure. In the process of creating the coal fields vast forests become coal veins.

Burning, or oxidation, of the combustibles is necessary to release the energy of the coal in heat form. Unfortunately electrical energy cannot be produced without this heat stage, intermediate between the chemical and the mechanical forms of energy. This is a wasteful process. Whereas a pound of coal has in it the energy to move a safety car three miles, including the usual number of stops and starts, actually it only moves the car a quarter of a mile, in spite of the use of highly efficient power plant equipment. Most of the energy goes off as heat in the several conversion processes.

So much for the energy in the lump of coal. What are the particular steps in its conversion on the Boston Elevated Railway?

The coal is received in steamers of approximately 7,500 tons capacity. It is unloaded by means of discharging towers, capable of handling 400 tons per hour, into cable cars of four tons capacity each. These cars, operating on an elevated, continuous cable-road system, deliver the coal into a storage field approximately 800 ft. by 300 ft.

As required for use in the power station, the coal is reclaimed from the storage field by a reclaiming tower, which operates on a traveling bridge, the coal being discharged through a hopper on the bridge into the cable cars. From the cars it goes into another hopper located over a coal crusher. The coal then passes through the crusher, which breaks it to sizes suitable for use in the furnaces. It is then deposited on inclined conveyor belts which, operating in connection with other belt conveyors, finally deliver it into the overhead bunkers in the power station. As the coal passes over the belt conveyors, it is automatically weighed. The coal thus placed in the bunkers is ready for distribution to the boilers.

From the station bunkers the coal is drawn into a traveling hopper, or larry, where it is again weighed. This hopper, operating up and down the boiler room, distributes the coal to the stoker hoppers of the furnaces. It is fed to each furnace by a series of rams operating under the fuel bed. By the continuous action of these rams, the new, unburned coal is forced upward through the furnace to the incandescent surface. Here it is mixed with air furnished to the fuel bed by blowers, and, being heated to a high temperature, it is consumed by combination with the oxygen in the air.

The combustion of coal in the furnace produces high temperature gases. These pass through the boiler, made up of tubes filled with water, and turn this water into steam which is confined in the boiler drums under pressure suitable for operation of the steam turbines.

Three quarters, more or less, of the energy originally in the coal, is thus absorbed by the water, increasing the pressure from that of the atmosphere to 200 lb. per square inch, and the temperature from, say 200 deg. to between 500 and 600 deg. Fahr.

From the boiler the steam is conducted through pipes to the turbines. The steam turbine is made up of a number of wheels, to the rims of which buckets or blades are attached so that they resemble wind mills. The passing of the steam through these buckets at high velocity forces them to rotate. The largest of the wheels is 12 feet in diameter and it rotates at 1500 revolutions per minute. The rim speed of the bucket wheel is, therefore, 10.7 miles a minute, or about 625 miles an hour.

It is in the conversion from heat to mechanical form that the greatest losses occur.

After the steam has passed through the turbine, it is discharged into a condenser, which is part of the turbine equipment. Here it comes into contact with brass tubes, cooled by sea water, and is condensed from steam into water again. This water is returned to the boilers to be reconverted into steam.

The circulating water used in a year to keep the condensers of the Boston Elevated Railway cool would fill a lake 10 miles long, 2 miles wide and 10 feet deep.

This is more than one-half the capacity of all the reservoirs of the Metropolitan Water Works, and nearly equals the amount stored in the Wachusett reservoir. The fresh water used in a year merely to supply losses from evaporation in the steam system and other uses wherein sea water is not permissible would fill a pond covering 10½ acres and 10 feet deep. Moreover, the water evaporated into steam in the boilers in the course of a year would fill a pond of the same depth, 147 acres in area.

The turbine shaft is connected to an electric generator which produces the electric current. This current is transmitted over insulated cables to the main bus of the power station, whence it is in turn transmitted over underground insulated cables to the several substations. The electrical energy is in what is known as alternating current form. It has a voltage of 13,200. Apparatus installed in the substations converts this electrical energy into direct current of voltage suitable for street car service. The electric current is carried from the substations by distribution feeders to the third rail of the elevated and subway system and to the trolley wire of the surface system.

The cover design of this bulletin is a view of South Boston Power Station where 164,140 tons of coal are converted into 207,507,600 K. W. H. in the course of a year.

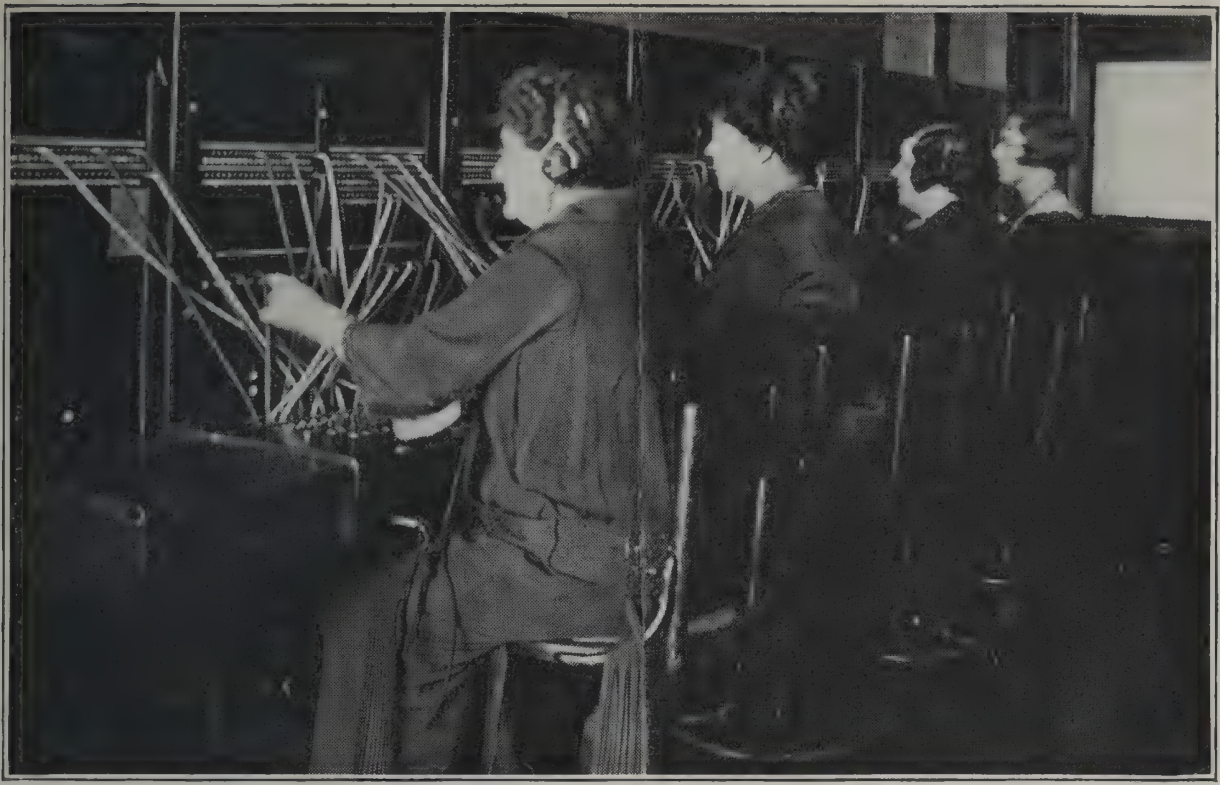
INTERIOR OF TEST CAR

RAIL BOND TEST CAR

The maintenance of the conductivity of the return circuit between car motors and power station is very important. One of the factors directly involved is the electrical condition of the rail joints. In order that this condition can be easily determined, an old type closed car has been equipped as shown in the cut.

The apparatus consists of a 4.5 K. W., 6-volt motor-generator set operating from trolley current. The generator drives approximately 400 amperes through the rails, the circuit being from generator to one truck and wheels, through the rails to the wheels of the other truck and thence back to the generator, the trucks being insulated from each other for this purpose.

A set of brushes are mounted on the inside of the trucks, the brushes making contact with the rail and the drop in voltage between these brushes caused by the resistance of the rail is measured on a sensitive meter. The graphic record of these measurements is made by maintaining a spark at the end of the meter needle which punctures a sheet of paper passing under the needle at a speed proportional to the speed of the car. If resistance of rail is uniform the record will be a straight line. If, however, due to a bad joint the resistance of the rail and joint is high, a sharp peak will occur in the line. This peak is then located with respect to street location and repairs can then be made.



TELEPHONE SWITCHBOARD AT GENERAL OFFICES

WHERE MOMENTS COUNT

Recently the telephone service Back Bay 1800 at the Park Square Building, was cut-over from an old type switchboard in temporary use, to a new four-position switchboard of the latest type.

The new switchboard was built at Hawthorne, Ill., and is so designed that it can be connected to an exchange that is operated by machine switching.

The operating part of the board, which is built of oak, is 13 ft. long and 5½ ft. high. Additional cabinets are provided at one end of the board for the auxiliary equipment. The board is of the multiple type with ten line panels, each line appearing on at least two panels and some on three panels, so that the whole service may be handled from any one of the operator's positions. Each line connected to the board has a light on the proper panel to signal the operator for incoming calls. Near the bottom of each panel is a pilot light which operates simultaneously with all other lights on that panel. The number of positions may be increased if necessary by adding panels. The line jacks are used for both answering and calling.

The operator's table is located on the front of the switchboard at a suitable height from the floor. It is about 16 inches wide and extends the whole length of the switchboard. At each position on the table there are 15 pairs of flexible cords used by the operator to complete connections. The cords are weighted so that only the terminals show above the table when not in use. Each pair of cords has a corresponding pair of supervision lights on the table, one red and one white. Also at each position there are two cam levers for each pair of cords to put ringing current on the lines.

A generator at Back Bay Exchange provides the ringing current. If this source fails for any reason, emergency ringing may be done by hand generator, one being provided for each position. The current for the signal and supervision lights and the talking current is obtained from a storage battery installed in the switchboard room.

Connected to this board are 15 trunk lines from Back Bay Exchange; 39 tie trunks to other private exchanges operated by our own operators and 113 lines to telephones located in the Park Square Building and other points on the system.

The total cost of this service, in yearly rental, paid to the New England Tel. & Tel. Co. is approximately $35,000.00.

Through these lines about 3500 calls a day are made. When one stops to consider the amount of time used in completing these calls the necessity of promptly answering all calls and the reduction of the number of calls to a minimum will be appreciated.

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WINTER'S EDUCATIONAL PROGRAM STARTS OFF WITH ENTHUSIASM

Beginning November 4th there have been held group conferences in four departments of the railway, namely maintenance, rolling stock and shops, power and transportation. In all of these departments programs of meetings have been arranged, approximately twenty in each case, covering the most important aspects of their respective lines of work.

The opening conferences were all of high order, the speakers being as follows: maintenance, H. M. Steward; rolling-stock and shops, E. P. Locke; power, Prof. T. H. Taft of M. I. T.; transportation, Hon. Russell A. Sears. These speakers, in their characteristic ways, gave the conferences the results of careful study of several important phases of transportation. Mr. Steward explained how the work for the maintenance department group has been laid out for the winter and gave some rules for success in maintenance as well as in other kinds of work. Mr. Locke, by means of an ingenious combination of drawings, portrayed the steps in the manufacture of a car in a car builder's shop. Professor Taft explained the principles of generating steam in a boiler and illustrated on the screen a number of typical boilers. Mr. Sears traced the history of accident prevention, gave statistics of accidents and accident costs on the Elevated Railway and suggested ways in which the accident menace can be controlled.

Lively discussion following the addresses, wherever time permitted, showed that the large audiences which listened to the talks were keenly alive to their opportunity.

The following table gives some statistics as to enrollments and attendance during the first week. The prospects are good for considerable increases.

Groups	Enrollment	Attendance
Maintenance	178	146
Rolling stock and shops	176	110
Power	64	49
Transportation	250	242
Women	37	......

The Women's Group Conferences will begin Monday, November 17th, and meetings will be held at the Instruction School, Sullivan Square, at 7.30 p. m. The speaker on November 17th will be John H. Moran, general auditor of the Boston Elevated Railway. His topic will be "Auditing," and he will trace an item in the auditing department from the requisition to the paying of the invoice.

Enrollments can still be received for courses to be given by the Massachusetts Department of Education, but should be handed to the group conference chairman at once.

ANSWERS TO QUESTIONS IN OCTOBER BULLETIN

1. This question involves a personal opinion of a view of the Everett Shops. It is a fact that these shops are the latest word in modern car repair shops, and will result in efficient repair of the equipment as well as provide adequate facilities for those engaged at this location.

2. During the year 1923 a total of 382,149,697 revenue passengers were carried, of whom 94,170,518 were 5-cent passengers.

3. The annual rides per capita in 1923 were 320, as against 290 in 1910, an increase of 11.88 per cent.

4. The subways and tunnels used by the Boston Elevated are eventually paid for by the car riders alone. The initial cost is paid by the city or state which charges a rental based on the cost. This rental is figured into the "cost of service" which by the Public Control Act has to be met by the operation, or in other words by the car riders.

5. Additional cars cannot be paid for out of revenue from car fares. The sale of bonds or an issue of stock would be necessary.

6. A steel car resembling our elevated type with three side doors.
   - Two cars being permanently attached together with a straight draw bar.
   - Doors hung outside.
   - Cabs on the extreme ends of the two attached cars.
   - Guard operates the doors of two cars.
   - Special 94-watt lamp for interior lighting.
   - Some other special features are variable load brakes and electric door operators.

7. 100 per cent. of the high tension wires are underground.

8. The No. 5 cars have 24 heaters, eight to a circuit, and 25 lights, five to a circuit. The heaters will use about fourteen times as much current as the lights.

CAR WHEELS

The wheels on the earlier types of electric railway cars were made of cast iron. When rapid transit trains operating on an elevated structure or in a subway were introduced it became necessary for safety to use a wheel with a steel tire. Later, rolled steel wheels were produced and used in rapid transit service. These wheels proved safer and more economical than the steel tire wheel and have now almost entirely supplanted the latter.

The use of heavier and higher speed surface cars increased the destructive chipping and breaking of the flanges of cast iron wheels. Steel wheels were therefore introduced and have proved very satisfactory.

When cast iron wheels were used for surface cars a skidded or flat wheel was a frequent occurrence. A flat wheel is an annoyance to passengers and has a destructive and costly effect upon the car equipment and road bed. Steel wheels have greatly reduced this source of trouble and it is now a rare occurrence to ride on a car with a flat wheel.

The mileage obtained from wheels varies with their diameter. The average life of a 26-inch wheel is 54,000 miles. The average life of a 33-inch wheel is 78,500 miles.

The miles rolled by the wheels in our service will be appreciated when it is realized that last year the cars ran over 53,000,000 miles. This is equivalent to a car starting approximately every four hours continually day and night for a trip around the world. Since there are from four to sixteen wheels under each car depending upon the type of car, the wheel mileage is enormous. Last year it was 423,373,000 miles, or 17,000 times around the earth. To run this number of miles the wheels made 290,000,000,000 revolutions. The 22,000 wheels on the property have a total weight of 9,500,000 pounds and a value of $595,000.

FIRST GENERAL MEETING A REAL SUCCESS

On Wednesday evening, November 12th, the Sullivan Square Instruction School was crowded to the doors with a company of men and women employes of the Elevated Railway at the first of five general meetings which have been planned for the season of 1924-25.

The principal speaker was James T. Williams, Jr., editor of the *Boston Evening Transcript*, his topic being "The Larger Americanism." Short talks were made by a number of men who had attended the A. E. R. A. convention at Atlantic City and the National Safety Congress at Louisville. Their talks had been carefully prepared so as to cover their subjects in a minimum of time. Mr. Dana discussed briefly the topic "At What Age Should a Person Stop Studying?" his idea being that continued progress on the part of the individual depends on mental alertness and general capacity to learn.

Excellent motion pictures were shown during the evening, including an instructive one on "The World of Paper," a new film loaned by the General Electric Company. A comic film, "A Box-Car Comedy," closed the program. This was secured through Mr. Herman Mintz. The new radio equipment proved serviceable, also, in the hands of Walter Smith, signal engineer.

SEPTEMBER OPERATION

	1924	1923
Cost of service exceeded revenue....	$207,334.30	$251,688.05
Ratio operating expense to operating revenue	77.57%	80.67%
Operating revenue per car mile operated...	58.76c	58.56c
Operating revenue per car hour (A. E. R. A. Standard)...............	$5.57	$5.33
Revenue passengers..............................	29,765,633	29,454,932
Per cent. 5c fare passengers.............	27.41	25.97
Average fare per revenue passenger..	8.629c	8.701c
Revenue passengers per car mile operated	6.692	6.612
Car miles operated..............................	4,447,741	4,454,770
Trips operated....................................	574.090	533,819
Employes complained of by car riders	109	94
Complaints in regard to car service....	11	7
Average number of witnesses per accident	3.78	3.65
D. C. K. W. output gross for month..	17,381,140	17,600,410
Maximum K. W. hour load.................	56,820	60,430
Tons of coal consumed........................	14,778	16,244
Lbs. of coal burned per K. W. D. C. at cars	1.91	2.07
Revenue passengers carried per accident	40,959	40,795
Accidents per 10,000 car miles.........	2.32	2.39
Car defects per 10,000 car miles........	6.7	8.4

EDWARD DANA, *General Manager.*

Nov. 14, 1924.

No number

Vol. 3 DECEMBER, 1924 No. 12

PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

CO-OPERATION

SERVICE

SAFE FOR THE CAR RIDERS SURE

SATISFACTORY

Comparative Division of Receipts and Expenditures for the Years Ending September 30th

			Percent of rev.		Per Mile		Per Rev. Pass.	
	1924	1900	1924	1900	1924	1900	1924	1900
Population	1,195,552	851,503						
Revenue Passengers Carried	386,405,360	201,124,710						
Revenue Car Miles	56,176,969	38,353,514						
Revenue Passengers per Mile	6.878	5.244						
Revenue Passengers per Capita	320	236						
Total Receipts	$34,202,833.37	$10,236,994.49			60.88c	26.69c	8.85c	5.09c
Operating Expenses:								
Wages	17,249,016.60	3,440,848.28	50.43	33.61	30.70c	8.97c	4.464c	1.711c
Material, Supplies & Other Items	3,122,986.08	2,666,702.62	9.13	26.05	5.56	6.95	.808	1.326
Injuries and Damages	750,057.18	420,000.00	2.19	4.10	1.34	1.10	.194	.209
Depreciation	2,373,000.00	240,000.00	6.94	2.34	4.22	.63	.614	.119
Fuel	1,499,384.24	300,559.34	4.38	2.94	2.67	.78	.388	.149
Total Operating Expenses	$24,994,444.10	7,068,110.24	73.07	69.04	44.49c	18.43c	6.468.c	3.514c
Taxes	1,598,392.87	825,993.04	4.67	8.07	2.85	2.15	.414	.411
Rent of Leased Roads (Inc. Div.)	3,179,469.16	1,494,630.00	9.30	14.60	5.66	3.90	.823	.743
Subway and Tunnel Rents	2,103,153.28	211,146.67	6.15	2.06	3.74	.55	.544	.105
Interest on B. E. Bonds and Notes	2,553,367.41	498,569.89	7.47	4.87	4.55	1.30	.661	.248
Miscellaneous Items	68,400.20		.20		.12		.018	
Total Cost of Service	$34,497,227.02	$10,098,449.84	100.86%	98.64%	61.41c	26.33c	8.928c	5.021c
Loss, not including Profit and Loss Items	**$294,393.65**				.53c		.077c	
Gain, not including Profit and Loss Items		$138,544.65				.36c		.069c

SEEK KNOWLEDGE

There is no possibility that we shall ever know everything.

Life continually compels us to act on imperfect knowledge, if we would act at all. It was with imperfect knowledge that Columbus brought his keel to graze the shore of the Western World. But within the limits of what is for you attainable, bring together all possible data for clear opinion and decision. The very last item gathered may be the most important, or may be the key to all the rest. Do not forget that the mind tends always to follow the track of a previous thought as the line of least resistance.

Contributed by an Employe.

* * *

LOCAL RIDE FIVE CENT PASSENGERS

During the year ending June 30, 1924, 102,813,020 local five-cent short-ride passengers were carried on the Elevated and 283,450,138 ten-cent passengers, making the average fare for the entire system 8.668c.

It is interesting to note that this number of local five-cent passengers exceeds the total revenue passengers carried on all the street railway lines in the following 12 states in the Union, which represents one-quarter of the states in the Union:

	Rev. Passengers Carried 1922
Arizona	5,473,890
Idaho	3,221,682
Mississippi	8,412,372
Nevada	480,000
New Mexico	1,383,016
North Dakota	3,378,686
South Carolina	20,211,444
South Dakota	2,022,714
Wyoming	683,964
New Hampshire	19,639,754
Montana	15,141,582
Delaware	20,860,564
	100,909,668

PLANT IMPROVEMENTS

There have been expended by the Trustees between July 1, 1918 and June 30, 1924, approximately $25,800,000 upon road and equipment, either for entirely new property or for replacement of worn-out property. This amount has been expended providing facilities necessary for the efficient and economic operation of this railway, as follows:

Cars	$12,022,254.87
Car houses and shops	3,853,851.64
Power houses and transmission of electricity	3,183,039.28
Surface lines (track and line betterment)	4,213,889.86
Elevated structures and appurtenances	2,039,848.07
Miscellaneous improvements	504,482.71
Total	$25,817,366.43

When added to the total of $3,755,270.80, which had been expended upon road and equipment in excess of any capital issues at the time the trustees took charge of the railway property on July 1, 1918, it made a total to be provided for during the first six years of public control of approximately $29,675,000.

The money to provide for such betterments came from the following sources:

$2,000,000.00—part of the proceeds from the sale of Preferred Stock which the stockholders were compelled to subscribe before the Public Control Act could take effect.

7,868,000.00—proceeds from the sale of the Cambridge Subway to the Commonwealth.

12,270,000.00—available from the depreciation charge, July 1, 1918, to June 30, 1924.

1,000,000.00—approximate amount received in settlement of fire insurance losses.

1,300,000.00—the approximate cash proceeds resulting from the sale of real estate properties.

3,000,000.00—additional bonds issued against the Preferred Stock which was sold under provisions of the Public Control Act.

$27,438,000.00

* * *

The On-Time man doesn't keep success in waiting.

Nathan C. Fowler, Jr.

SNOW FIGHTING

The cover design of this issue shows a snow sweeper in operation. This is the period of the year when snow fighting becomes an integral part of the street railway man's life. If it were possible to know in advance when snow is coming and how much would fall it would be a very simple matter to make plans to care for it. As this is of course impossible it becomes necessary to follow the weather reports closely and to watch the barometer and thermometer for developments in order that on short notice effective action may be taken to cope with the situation which may arise.

The three departments—Transportation, Maintenance & Rolling ing Stock and Shops, are all vitally concerned and their efforts necessarily must be co-ordinated. Detailed plans have to be prepared long in advance by these three departments and complete understanding had as to carrying out these plans.

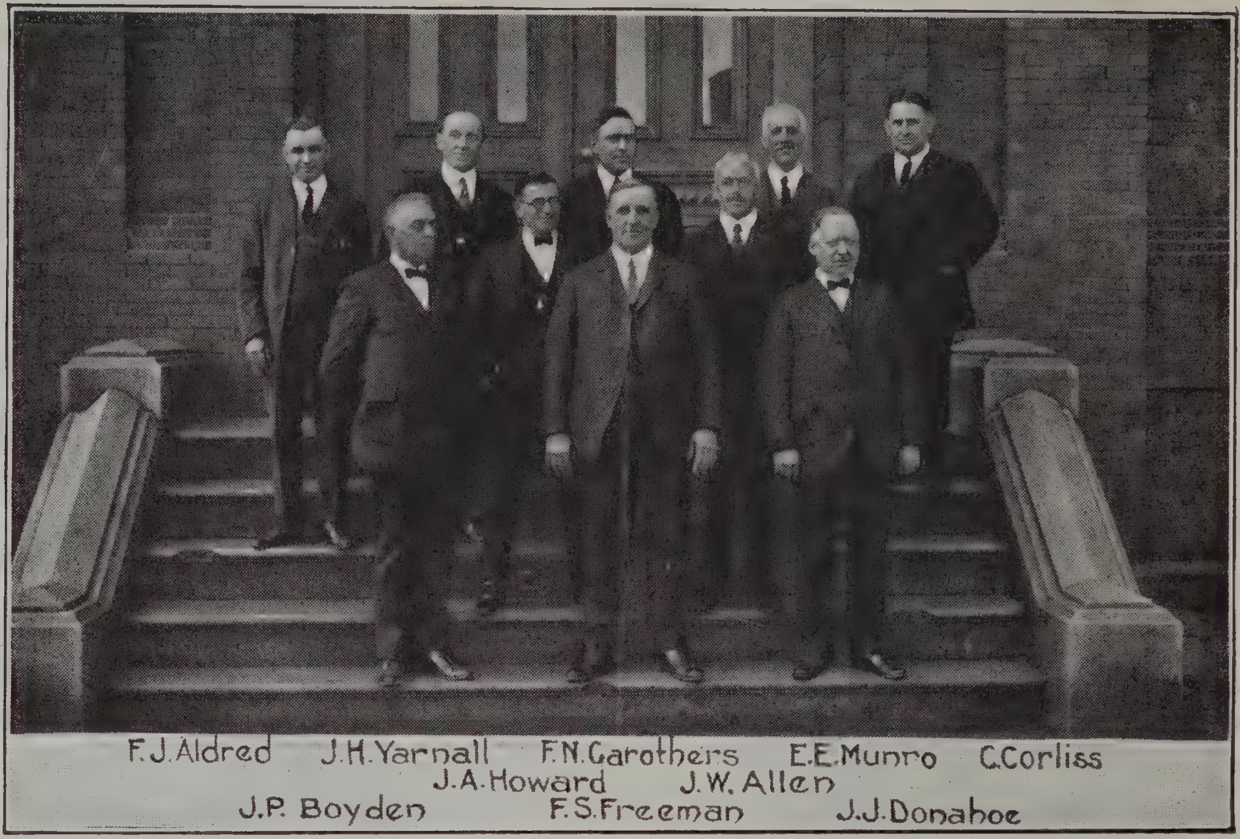
The Rolling Stock & Shops Department have at the present time 152 four-wheel plows, nine eight-wheel plows, two four-wheel sweepers and 14 eight-wheel sweepers, which have to be placed in first-

rtmental Conference Group.
ilway
Nov. 12, 1924.

class operating condition for use by the Transportation Department.

The Maintenance Department in addition has eight tractors, five large trucks with shears, one broom mounted on truck, seven small trucks, four snow loaders, three road graders, three rail cars equipped with 32-foot wing and one ice scarifier.

The snow plowing is under the direction of the Transportation Department and snow removal under the Maintenance Department. While the heavy cost of fighting snow is in one sense waste, it is nevertheless absolutely necessary and cannot be neglected if cars are to be promptly and efficiently operated. The greatest single factor, however, in the success of snow fighting is the attitude of the men upon whom the result of the fight largely depends. If the spirit of these forces rise to the occasion there is little to fear in the effect of snow storms. The men engaged in this work have long shown their loyalty to the service, their fighting spirit and their constant diligence in the determination to win, and it is largely upon the basis of this spirit that adequate transportation is rendered in the New England winters to the thousands of car riders.


F.J.Aldred J.H.Yarnall F.N.Carothers E.E.Munro C.Corliss
J.A.Howard J.W.Allen
J.P. Boyden F.S.Freeman J.J.Donahoe

MEET THE POWER DEPARTMENT OFFICIALS

The group shown in the above cut are those responsible for the operation and maintenance of the Power Department. They are, so to speak, "behind the scenes," but as we realized one October morning the rest of the play stands still if all is not well behind the scenes. Their average age is 45 years and their average length of service 17 years. Alternating current at 13,200 volts and steam turbine blades operating at a maximum speed of 625 miles per hour are everyday matters with them.

Freeman, Fred'k S.	Supt. of Power
Yarnall, J. Henry	Power Engineer
Allen, J. Walter	Electrical Engr.
Howard, Joseph A.	Chief Clerk
Boyden, James P.	Supt. of Wires
Donahoe, Jere. J.	Chief Oper. Engr.
Carothers, Fred N.	Gen. For. of Substas.
Corliss, Cyrus	Constructing Engr.
Aldred, Frank J.	Efficiency Engr.
Munro, Ellsworth E.	Supt. of Construction

THE IMPORTANCE OF TREATING MINOR INJURIES

BEWARE of the little cuts and scratches. Of course, you will have the more serious wounds promptly treated. What many do not realize is that a small wound to hands or feet or other parts of the body may be just as dangerous, or more so, than a more extensive injury.

The fact that you have neglected many a small injury and suffered no bad effects, does not indicate that you will always escape serious results.

The skin forms a marvellous protection for the body. On our hands and over the whole body, as well as on the materials we handle in our work, are myriads of bacteria, yet they do not harm us.

But when the skin is broken even by a small cut or a scratch, the bacteria gets inside of this protective covering, and begin to multiply with startling rapidity. The blood immediately begins its fight to overcome these bacteria, and to kill them out. Fortunately, our blood usually wins the battle, and the wound soon heals.

We must remember, however, that many times our powers of resistance are low, and the infection spreads through the system and "blood poisoning" results.

Or, even when our resistance is good, the bacteria in a wound may be so virulent that in spite of all nature can do, the process goes on and serious illness or death may follow. This fact makes neglect of the small injury a serious matter, and often more dangerous to us than the injuries which force us to seek medical aid at once.

NO INJURY WHICH BREAKS THE SKIN IS TOO TRIVIAL TO BE TREATED.

When you suffer an injury of any kind, especially if it "draws blood," go at once to a doctor or to a first-aid station and have it promptly and properly treated.

As soon after the injury as possible, apply some iodine to the wound. It will prevent many a bad infection, and coupled with proper further treatment has saved many a life.

* * *

KEEP THE RECORD UP

The accident record for October is most encouraging. The effort to operate this railway safely is bearing fruit, although the opportunity for improvement still remains great. If October can show such results December can be equally as good or better.

	1924	1923
Vehicle collisions	580	664
Personal collisions	28	51
Car collisions	15	32
Derailments	30	49
Alighting	75	96
Boarding	60	59
Rapid Transit lines	181	171

THE PEAK OF THE LOAD

December provides the peak of the load and nearly eight million more revenue passengers have to be transported during this month than during the low period in August.

It is the Christmas season as well as the end of the year. Tired bodies and taut nerves characterize the holiday rush.

Then is our task the most difficult and as we meet the added responsibilities with the best we have to offer will the dawn of Christmas day have a deeper inspiration for us all.

Courtesy, caution and active, intelligent effort bring their own reward to those engaged in transporting their fellow citizens, if earnestly practiced.

Our organization has the spirit and the ability. On with the holiday rush.

* * *

DON'T QUIT

When things go wrong, as they sometimes will,
When the road you're trudging seems all up hill,
When the funds are low and the debts are high
And you want to smile, but you have to sigh,
When care is pressing you down a bit,
Rest, if you must, but don't you quit.

Life is queer with its twists and turns,
As every one of us sometimes learns,
And many a failure turns about
When he might have won had he stuck it out;
Don't give up, though the pace seems slow—
You may succeed with another blow.

Often the goal is nearer than
It seems to a faint and faltering man.
Often the struggler has given up
When he might have captured the victor's cup.
And he learned too late, when the night slipped down,
How close he was to the golden crown.

Success is failure turned inside out—
The silver tint of the clouds of doubt.
And you can never tell how close you are,
It may be near when it seems afar;
So stick to the fight when you're hardest hit—
It's when things seem worst that you mustn't quit.

—Selected.

Merry Christmas to All

ELECTRIC RAILWAY SUMMARY

Passengers Carried—About 16,000,000,000 a year in the United States.

Track—A total of 44,000 miles in the United States.

Income — During 1923 their gross income was $1,100,000,000.

Investment — Almost $6,000,000,000, or about 2 per cent. of the national wealth. This investment is greater than the combined investments in all gas, telephone and telegraph companies.

Employes—About 302,000 employed directly.

Wages — Approximately $450,000,000 annually is paid to employes.

Coal—Consume about 16,000,000 tons yearly, or a ton of coal to every 1,000 passengers.

Improvements — During 1923 the industry purchased more new cars and locomotives than it had during any year since 1913. It also spent $282,000,000 during 1923 for new plant and equipment and maintenance materials. It will spend a similar amount in 1924.

Owners—Between 750,000 and 1,000,000 persons own the electric railways of the United States. They include men, women and children, trustees of estates and others.

OCTOBER OPERATION

	1924	1923
Cost of service exceeded revenue........	$36,155.55	
Revenue exceeded cost of service........		$15,830.84
Ratio operating expense to operating revenue	74.66%	74.54%
Operating revenue per car mile operated	61.36c	62.38c
Operating revenue per car hour (A. E. R. A. Standard)	5.85c	5.72c
Revenue passengers	32,846,982	33,432,368
Per cent 5c fare passengers................	27.55	26.31
Average fare per revenue passenger..	8.622c	8.685c
Revenue passengers per car mile operated	6.988	7.063
Car miles operated..............................	4,700,300	4,733,556
Trips operated	600,325	564,000
Employes complained of by car riders	112	121
Complaints in regard to car service....	14	18
Average number of witnesses per accident	3.78	3.55
D. C. K. W. Hr. output gross for month	19,039,835	19,422,840
Maximum K. W. hour load.................	63,000	62,940
Tons of coal consumed.........................	16,983	18,855
Pounds of coal burned per K. W. Hr. D. C. at cars...	2.004	2.187
Revenue passengers carried per accident	33,898	29,797
Accidents per 10,000 car miles............	2.06	2.37
Car defects per 10,000 car miles..........	7.0	8.6

EDWARD DANA, *General Manager.*

Dec. 17, 1924.

ALLIED PRINTING TRADES UNION LABEL COUNCIL BOSTON

10.4 O.P.
*7388.744

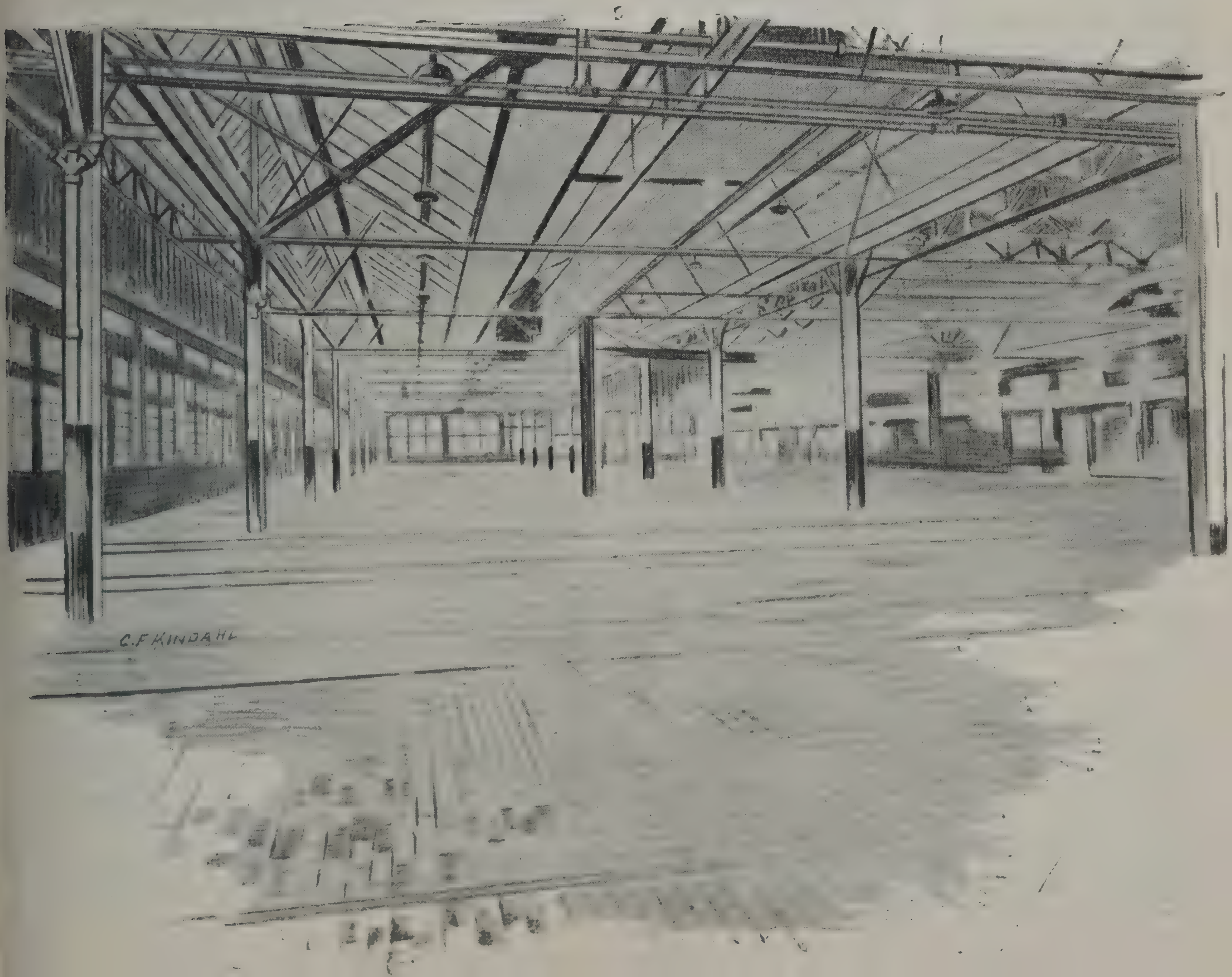
Vol. 4 JANUARY, 1925 No. 1

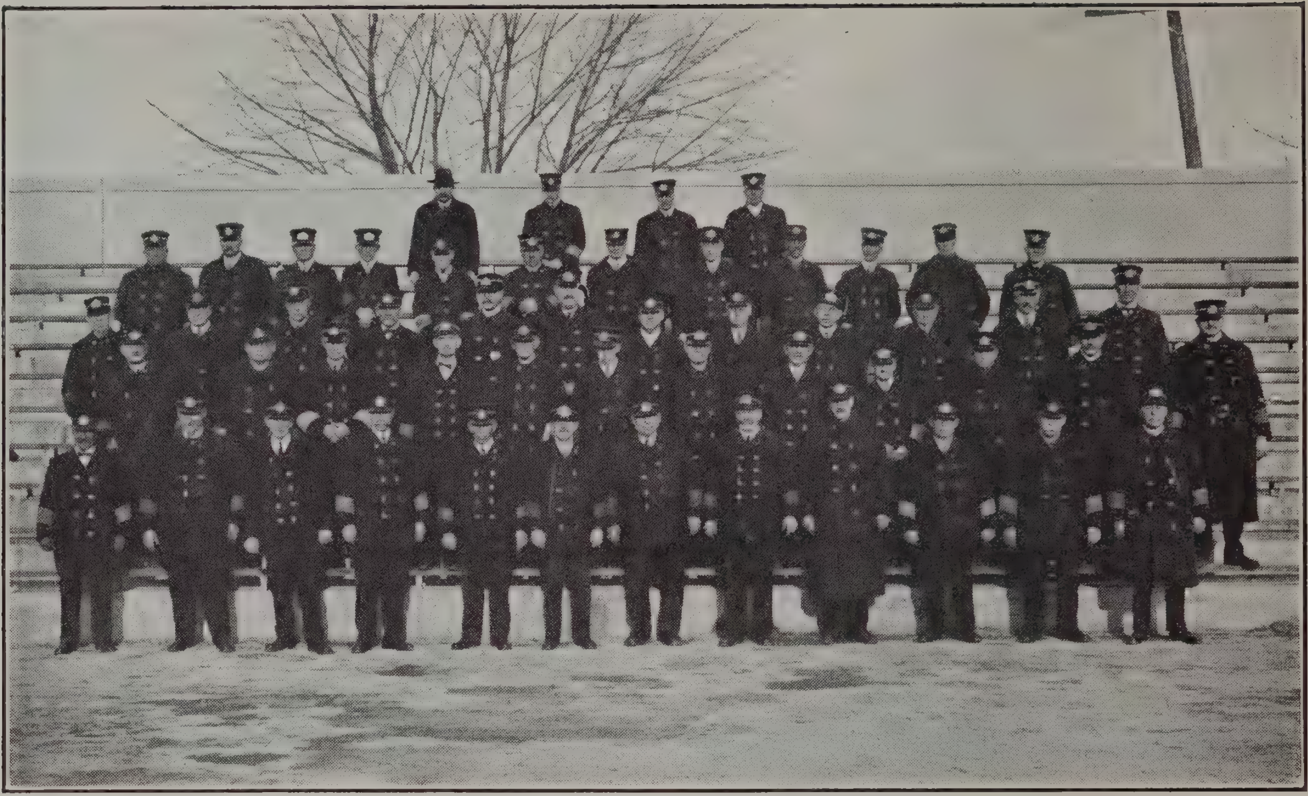
PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

CO-OPERATION

SERVICE
FOR THE
SAFE CAR RIDERS SURE
SATISFACTORY





2,351 YEARS OF SERVICE

On Tuesday, December 23, 1924, on the Town Field in Dorchester there gathered for the purpose of a group picture 52 men now in active service on cars and trains of this railway—men who have given more than 40 years of continuous service. Two men who should be in the group unfortunately were unable to be on hand.

We are all proud of them and wish them many more years of health and happiness. There are 3925 uniformed men in the service at the present time and 537 of them or 13.6 per cent have been in service over 25 years. At the time the picture was taken there were 530 men in Division 3; consequently there were sufficient men 25 years in service to man that entire Division and a sufficient number 40 years in service to man the entire East Boston Tunnel, which shows the relative proportion.

The men in the picture are grouped as follows:

Left to right:

First row: A. L. Hauser, Mman. 1003; W. A. White, Mman. 3004; G. W. Clark, Mman. 2177; D. Kelly, Mman. 2157; P. Cottle, Mman. 1371; H. E. Hood, Cond. 2009; E. Sweeney, Mman. 1061; J. O'Neil, Mman. 2135; P. Rahill, Mman. 2060; E. Cousins, Mman. 2026; J. Kelly, Mman, 2181; L. W. Donald, Mman. 2020.

Second row: E. A. Littlefield, Mman. 2054; J. F. Sweeney, Mman. 1158; M. Gordon, Mman. 2109; J. Kanney, Mman. 2155; J. J. Cunningham, Mman. 2255; C. T. Gallagher, Mman. 2187; S. A. Frank, Mman. 4239; T. Dawson, Mman. 4223; G. H. Lewis, Mman. 4458; A. J. Gray, Mman. 1322; A. Hanley, Mman. 1374; P. O'Donald, Mman. 2069.

Third row: J. M. Hannan, Mman. 2463; J. H. Donlan, Mman. 2024; E. Fenerty, Mman. 2112; M. Long, Mman. 2097; J. Bagley, Mman. 2209; G. R. Archibald, Mman. 2199; F. Holbrook, Mman. 2180; P. Norton, Mman. 2105; W. F. Dolan, Cond. 2068; M. Burke, Mman. 1435; T. Berrigan, Mman. 4178; A. Harvie, Mman. 4017.

Fourth row: J. Sullivan, Mman. 1104; M. McGrath, Mman. 1071; J. Donovan, Cond. 1030; J. F. Daley, Cond. 1148; T. Gearin, Mman. 1004; R. Fitzgerald, Mman. 3057; H. P. Tully, Mman. 1317; J. Mehegan, Mman. 1495; G. R. Archilles, Mman. 1084; C. F. Whitmarsh, Mman. 1180; F. H. Jacobs, Mman, 1348; C. Seaver, Mman. 2258.

Fifth row: J. Archibald, Mman. 2036; P. W. Manning, Mman. 1128; J. Welch, Mman. 4165; P. J. Healey, Mman. 2130.

Mman. R. E. Nelson, 1357 and Mman. J. Wallace, 3172, were unable to be present.

SIGNALS

With the construction of the Rapid Transit Line from Sullivan Square to Dudley street, which was placed in service on June 10th, 1901, the system was completed, equipped with automatic block signals and power interlockings.

Both block and interlocking signals were of the electro pneumatic type, requiring electric and compressed air power for their operation. It is interesting to note that this was the first signal installation ever made which employed rotary generator power for its electrical operating medium, and also the first attempt made to operate direct current track circuits for the automatic control of signals on a railroad using direct current propulsion.

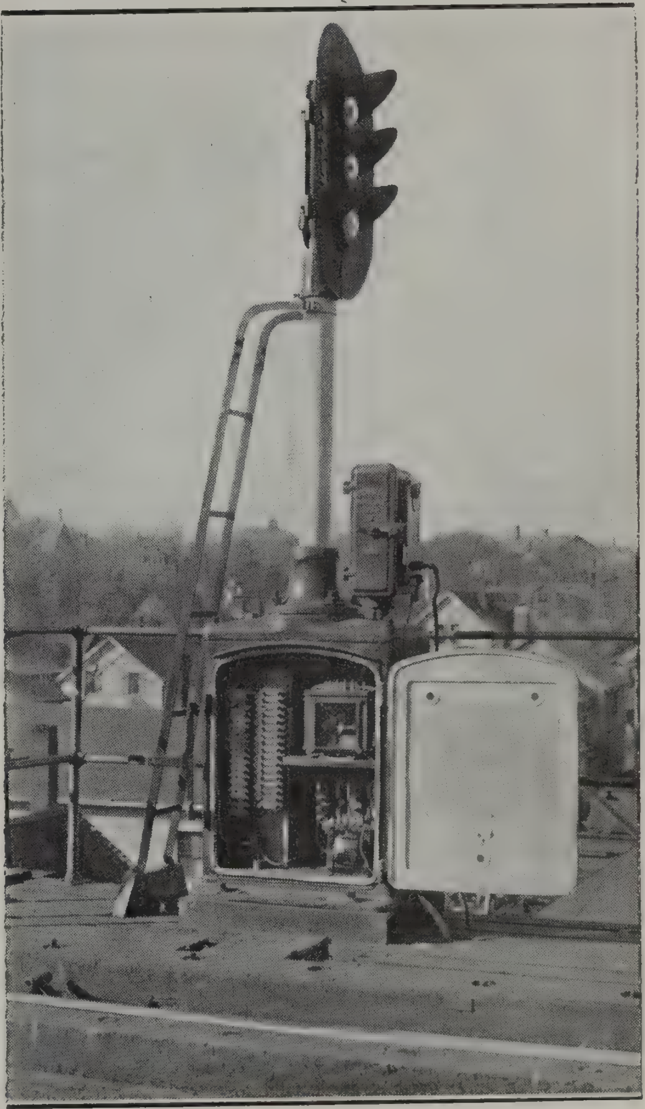
By way of explanation it should be understood that prior to this installation energy for track circuit operation was supplied from primary batteries of either the copper sulphate or caustic soda type, and further, that the combined use of direct current track circuits and direct current propulsion presented a new engineering problem to design signal apparatus which would function only from its own power service and not operate falsely from the propulsion power.

This system further included the first installation of the automatic stop; a device used in connection with each signal to compel its observance, by which, when the signal is in the danger or stop position an arm is caused to be raised above the top of rail to a point where it will engage a valve lever on the car truck connected with the air brake system.

In attempting to pass a signal in the danger or stop position this valve is opened, the air brakes set and the train stopped.

During the years which followed, rapid progress was made in the development of signal apparatus, but our original equipment by careful maintenance continued to function in a reasonably safe and reliable manner.

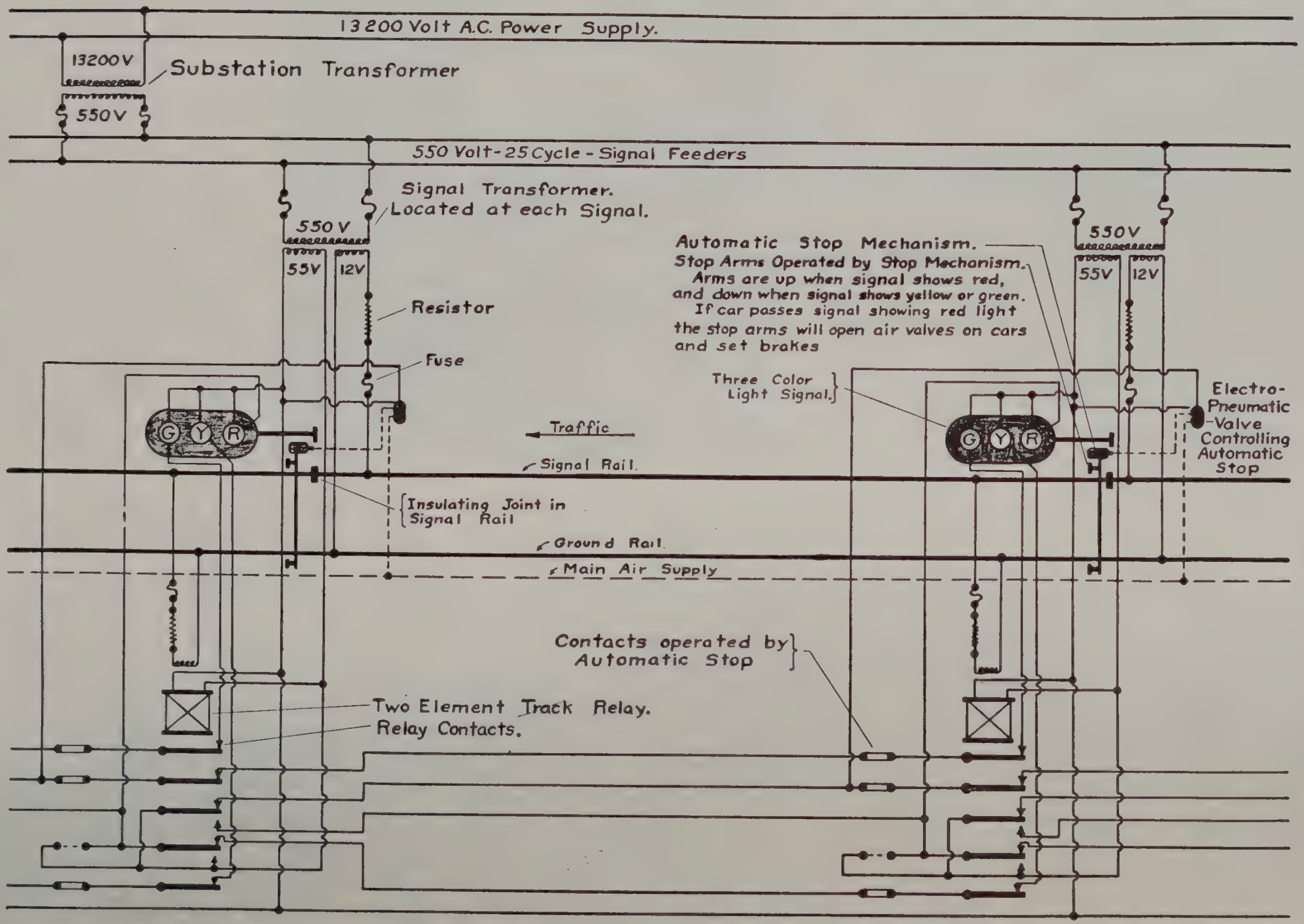
As traffic increased and longer trains were operated at a closer headway, numerous changes were made in signal locations and occasionally a new signal was added.



The extension of the Rapid Transit Lines to Everett, which was opened on March 15, 1919, furnished an opportunity to install a complete new system of modern signals on this section.

At about this time the traffic conditions had reached a point of congestion where it was found necessary to completely revise the old signal system in order that train service might be operated at a closer headway.

A thorough study of the situation revealed the fact that it would


13 200 Volt A.C. Power Supply.
13200V
Substation Transformer
550V
550 Volt - 25 Cycle - Signal Feeders
Signal Transformer.
Located at each Signal.
550 V
55V
12V
Resistor
Fuse
G
Y
R
Traffic
Signal Rail.
Insulating Joint in Signal Rail
Ground Rail.
Main Air Supply
Automatic Stop Mechanism.
Stop Arms Operated by Stop Mechanism.
Arms are up when signal shows red, and down when signal shows yellow or green.
If car passes signal showing red light the stop arms will open air valves on cars and set brakes
Three Color Light Signal.
Electro-Pneumatic Valve Controlling Automatic Stop
Contacts operated by Automatic Stop
Two Element Track Relay.
Relay Contacts.

BOSTON ELEVATED RAILWAY
MAINT. DEPT. SIGNAL DIV.
Diagram of Control Circuits for Three Position Automatic Light Signal.

OK. NHS. 1 Sheets. Sheet 1.
Approved. W. C. Smith Sig. Eng.
Scale: None
Date: 11-28-21
S505

be necessary to increase the number of block signals by about 52 per cent. to accomplish the desired results. Believing it unwise to add to an obsolete type of equipment by this amount, it was decided to rebuild the entire system. By so doing it was possible to take advantage of the latest developments in the art and at the same time secure equipment which obviously would result in more reliable operation and which could be maintained at less cost per unit.

The type of signal and control apparatus selected was the same as had already been installed on the Everett Extension.

The replacing of the old system with the new has been done gradually and we now have a uniform type of signal throughout the elevated line with the exception of the Atlantic Avenue section.

The new signal, as shown on page three is of the three color light type, having red, yellow and green aspects.

Both track and control circuits are operated from 25 cycle alternating current, generated at South Boston Power Station. This power is generated at 13,200 volts and is reduced by special transformers at Kendall, Dewey, Egleston and Charlestown substations to 550 volts for transmission to the various sections. At each signal location this voltage is further reduced by a special transformer having two secondary windings; one furnishing current at 55 volts for the operation of lamps and control circuits, and the other at 12 volts for the track circuits. Thus the possibility of interference from the propulsion power has been eliminated by using signal apparatus which will not respond to direct current.

The wiring diagram on page four shows the control circuit of a standard three-color light signal and automatic stop. The aspects are: red, stop; yellow, one block clear, proceed with caution; green, two or more blocks clear, proceed at speed.

The present automatic block signal and interlocking system represents an investment of $1,111,343.00.

* * *

EVERETT SHOPS

The cover design of this issue shows the entire view of the front shop.

In the first number of "CO-OPERATION," which was published January, 1922, attention was called to our proposed new repair shops at Everett, and a view showing the entire completed plant was shown. Later on, attention was called to the progress of the work of constructing the so-called "Bartlett Street Unit," comprising the departments formerly located at the old Bartlett Street Shops. Now this portion of the shop is in full operation, taking care of the work of repairs and painting of car and bus bodies, together with the power house, which is built of sufficient size to take care of the future needs of the entire shop.

The present shop comprises a Paint Shop, approximately 362 feet long by 172 feet wide, with headroom of 20 feet to the underside of the trusses. There is a balcony provided along part of one side, which accommodates sign painting, locker and toilet rooms, office, etc. The Woodworking Building is approximately 362 feet long by 157 feet wide, also having a balcony along a part of one side, containing the upholstery department, toilets, lockers, etc.

There is also a dry kiln building and a lumber storage building. These are so located in relation to the railroad facilities and the millroom that lumber is received, dried, milled and stored in the most economical way. The mill room is probably one of the best and most efficiently equipped of its kind in the country.

The main artery of the present as well as the proposed main shop is the transferway, which extends the length of the present plant, with provision for future extension. This transferway is equipped with a covered 100 ton capacity transfer-table, which operates at a speed of approximately 8 miles an hour, and is capable of carrying quickly any type of surface or elevated car to the desired track location. Connecting to this transferway is suitable trackage making it possible to bring in freight cars from the railroad siding, elevated cars from the Everett Extension, and surface cars from Broadway, and it also has access to a car storage yard, with a capacity of 40 cars, taking care of incoming and outgoing cars.

In order to avoid complication, as well as danger and inconvenience from the overhead trolleys, the transferway is equipped with windlasses for pulling cars in and out of the shop buildings. Lighting for the cars while in the shop is provided by means of an insulated bug wire overhead.

In designing the shops, first consideration was given to proper light and ventilation; this was accomplished by means of extensive skylights, and large window areas. A careful study was made of the various repair shops in the country to determine the best form of artificial lighting, with the result that these shops are one of the best, if not the best, lighted in the country. Provision is also made for the convenience of the employees, in accordance with the latest practice.

The extent of the work involved in building this group of buildings cannot be appreciated by looking at the finished product, for the reason that nearly half the work of construction involved was underground. Foundations for the buildings in some cases were required to go to a depth of 40 feet, also a very complete system of yard fire protection, lighting and drainage was required.

The power house, so-called, is fundamentally a heating plant for the entire shops, and also contains electrical equipment for transforming and changing frequency in the power required for the shop. In order that two sources of power might be available, a high tension underground feeder was installed from Sullivan Square, under the river, to this power house.

To safeguard the shops against loss by fire, a complete system of fire protection was installed, consisting of automatic sprinklers, watchman's clock system, and a complete fire alarm system with alarm whistle—the alarm system being equal in magnitude to that of a good-sized town, and this system is tied in with the city of Everett fire alarm system, connecting to fire department headquarters.

✻ ✻ ✻

PENSIONS

There are 289 men on the pension roll at the present time. During 1924, 70 men were added to the list and death called 24 from the list. The average length of service of those placed upon the list during the year was 33 years. There was paid during 1924 $135,146.06 to the men on the pension list.

✻ ✻ ✻

HAPPY NEW YEAR
1925

This is the 7th new year under public operation. Much has been accomplished during the last six and one-half years. Problems confront us which require a spirit of determination and looking forward, not backward.

A Happy New Year to our entire Elevated family.

R.Kundert M.Moore R.B.Smythe H.B.Downs A.A.Ordway O.Wederbrand J.McDonald E.P.Locke
S.B.Smythe D.S.McKay J.Lindall J.M.Patten H.G.Noble E.Brewster

THE DEPARTMENT OF ROLLING STOCK AND SHOPS OFFICIALS

The cut shows the men responsible for the administration of the maintenance of rolling stock. They perform first-aid service as well as hospital treatment for sick or injured cars. Many changes of conditions have occurred during the length of service of these men, not the least of which was the Everett Shops which more than any other change brought a new spirit of service to their problem.

Their average length of service will approximate 25 years.

John Lindall, Supt. Rolling Stock and Shops.

R. B. Smyth, Asst. to Supt. Rolling Stock and Shops.

E. P. Locke, Engineer Car Construction.

S. B. Smyth, Chief Clerk, Dept. R. S. &. S.

H. G. Noble, Supt. Car Shops.

H. B. Downs, Gen. Foreman, R. T. L. Shops.

Elias Brewster, Supv. of Equip., So. Section.

Joseph McDonald, Supv. of Equip., No. Section.

D. S. MacKay, Supv. Garages and Automotive Equipment.

A. A. Ordway, Storekeeper.

Rudolph Kundert, Machine Shop Foreman.

Oscar Wederbrand, Armature Shop Foreman.

J. M. Patten, Truck Shop Foreman.

M. G. Moore, Albany St. Garage Foreman.

* * *

WE ALL MAY DO GOOD

We all may do good where we often do ill,
There's always a way if we have but the will.
If it be but a word kindly breathed or expressed
It may guard off some pain or give ease to some breast.

We all may do good in a thousand small ways
Forbearing to flatter yet yielding due praise
In spurning ill-rumor or reproving wrong done
And treating with kindness each heart we have won.

We all may do good whether lowly or great,
Good deeds are not judged by the purse or estate.
If it be but a cup of cold water that's given
Like the widow's two mites it is something to Heaven.

—Contributed by an employe.

REMARKS OF GENERAL MANAGER MEETING WITH DIV. 589 OFFICERS STARTING THE NEW YEAR

We are standing at the threshold of a new year. This meeting with the new officers of your organization as well as with those now going out of office follows previously established precedent.

It is to me a pleasant duty to meet and treat with the officers of your organization. The close human contact of such meetings is in itself stimulating because the problems are complicated problems of technique as well as human relations.

I am personally in entire accord with the soundness and fairness of collective bargaining. It rightfully removes from men in positions such as mine the opportunity to make errors of judgment which may result in placing unfair burdens upon the shoulders of others. But gentlemen, it dignifies, enlarges and increases the responsibilities placed upon all of us. None of the great advances of the world came without bringing their great responsibilities. This method of contact, of amicable adjustment, of analytical examination of facts, should never be affected by selfishness or petty motives.

To those returning to their positions I express my pleasure at the intimate friendship I have formed with them. I hope that they have learned to know me equally as well and that they will continue to exert a helpful influence on their return and to give with renewed vigor their efforts to the service in which we are engaged.

To those who become the agents with whom I am to deal during the next year I pledge the same friendly attitude which I hope I have succeeded in according those in responsible positions during the last year. I shall hope to know them equally as well at the end of this year. Let us forget the difficult spots, if any of the past, avoid them in the future and make progress as we go along. We are engaged in a service to our fellow men and women. That fact must not be forgotten.

Cases finally disposed of with the officers of last year are now closed and we shall take up promptly those which now occur in the regular manner provided for doing so.

NOVEMBER OPERATION

	1924	1923
Revenue exceeded cost of service	$15,031.47	$83,410.50
Ratio operating expense to operating revenue	71.74%	70.78%
Operating revenue per car mile operated	62.41c	62.92c
Operating revenue per car hour (A. E. R. A. Standard)	5.954c	5.769c
Revenue Passengers	30,733,603	32,899,951
Per cent. 5c and 6c fare passengers....	20.35	26.32
Average fare per revenue passenger..	9.117c	8.684c
Revenue passengers per car mile operated	6.737	7.117
Car miles operated	4,570,664	4,632,331
Per cent. Rapid Transit mileage	27.40	25.07
Trips operated......	579,028	550,340
Employes complained of by car riders	118	91
Complaints in regard to car service..	15	19
Average number of witnesses per accident	3.8	3.5
D. C. K. W. output gross for month....	21,622,780	22,425,015
Maximum K. W. hour load......	81,230	75,540
Tons of coal consumed......	19,760	21,336
Pounds of coal burned per K. W. D. C. at cars	2.053	2.138
Revenue passengers carried per accident	41,419	35,956
Accidents per 10,000 car miles	1.62	1.98
Car defects per 10,000 car miles......	7.2	8.3

EDWARD DANA, *General Manager.*

Jan. 20, 1925.

ALLIED PRINTING TRADES UNION LABEL COUNCIL BOSTON 81

*9385.744b.5

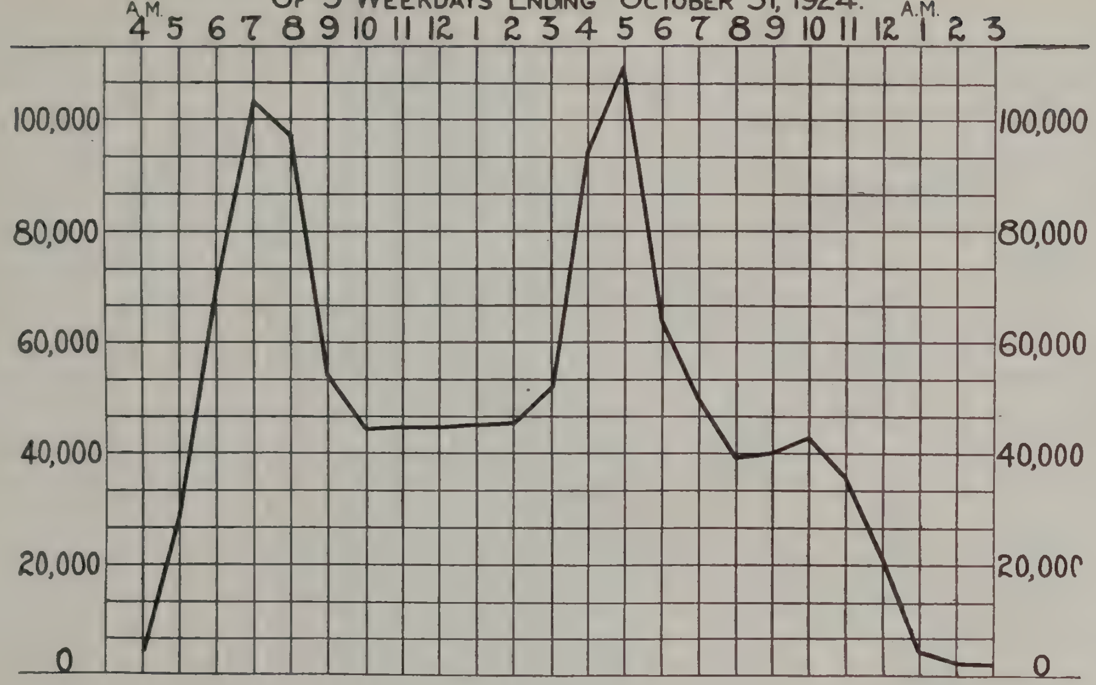
Vol. 4 FEBRUARY, 1925 No. 2

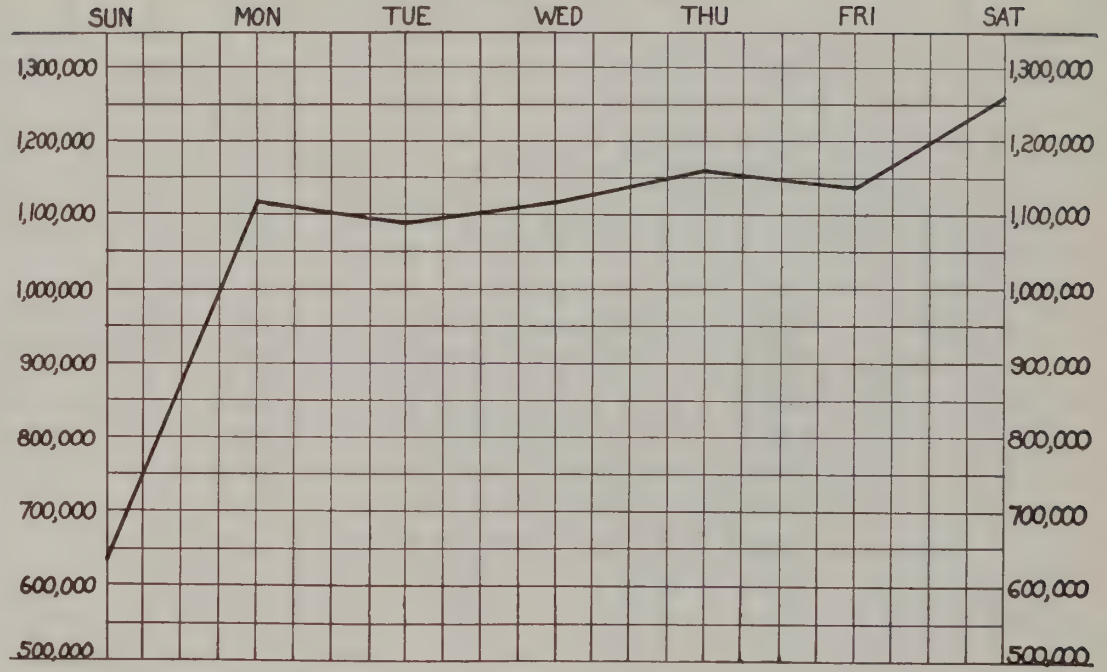
PUBLIC TRUSTEES

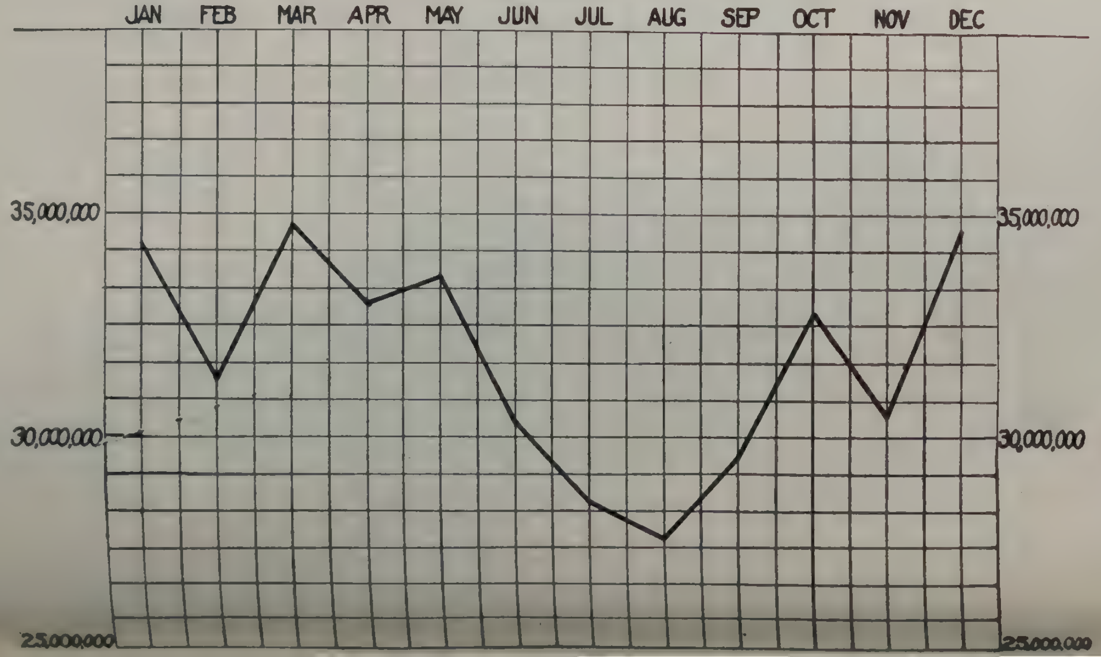
BOSTON ELEVATED RAILWAY

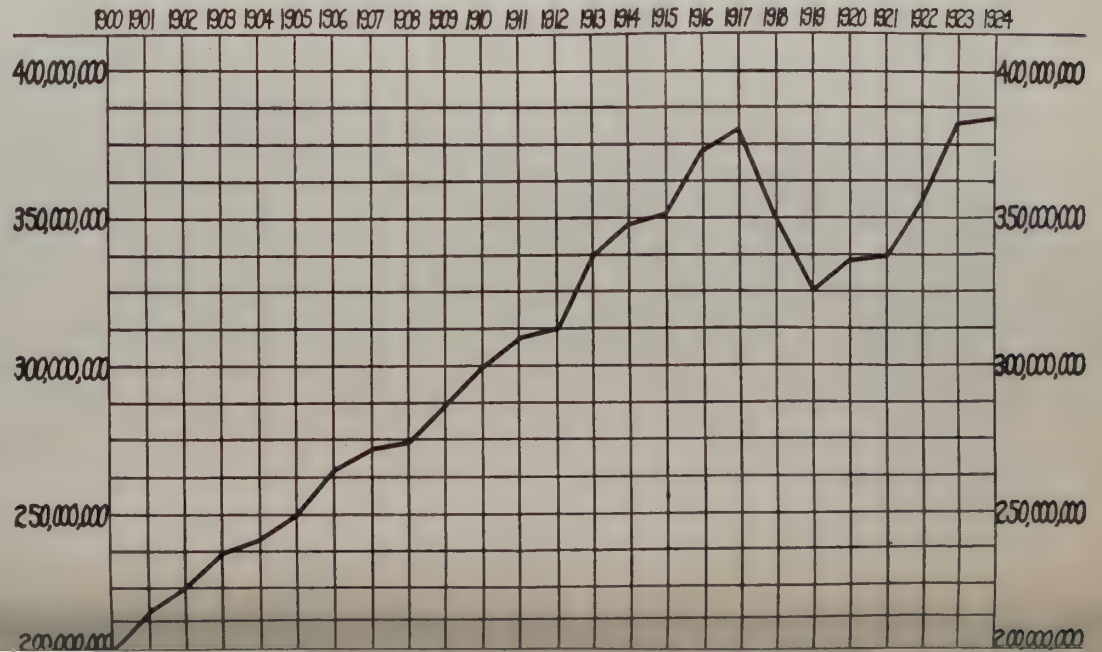
CO-OPERATION

SERVICE
FOR THE
SAFE CAR RIDERS SURE
SATISFACTORY


REVENUE PASSENGERS HOURLY BASED ON AN AVERAGE OF 5 WEEKDAYS ENDING OCTOBER 31, 1924.


REVENUE PASSENGERS DAILY
WEEK ENDING NOV. 1, 1924.


REVENUE PASSENGERS MONTHLY
YEAR 1924


REVENUE PASSENGERS ANNUALLY

OUR FLUCTUATIONS

In hospitals charts are plotted which show the fluctuation in the temperature and pulse of the patients. Few of us realize until we observe the charts the fluctuations which occur in our traffic hourly through the day, daily through the week, monthly through the year, and annually over a long period of years.

The chart shown on page two shows very clearly the pulsations of our business. For instance, during the hours of the day traffic varies from the normal base traffic of 45,106 revenue passengers per hour to 115,197 revenue passengers in the evening rush hour, an increase of 155.4%, and then gradually falls off until it reaches its minimum in the early morning (night car) service, preparatory to again starting the upward climb to the morning rush hour peak.

During the days of the week there is a fluctuation of no less significance. From Monday to Friday the daily traffic approximates an average of 1,109,861, rising to 1,216,132 on Saturdays and falling to 630,755 on Sundays, an increase over the normal of 9.57% on Saturday and a decrease from the normal of 43.17% on Sunday.

In the variations from month to month during the period of a year the swing is from August, the low point at 27,640,267 revenue passengers, to December and March, the high points at 34,366,600 revenue passengers, or an increase of 24.33%.

Over a long period of years the curve starting in 1900 at 203,521,121 revenue passengers constantly increased to 1917 when it reached 381,017,338 revenue passengers, then passed through a period of recession, and again increased until 1924 when it reached a new high record of 382,888,848 revenue passengers.

It will be noted that whereas the load from year to year over a long period is slowly on the upward trend, the great fluctuations by the hour, day and week are the factors which make operation difficult and are factors which are little known by the car riding public and not generally appreciated by those of us actually engaged in the transportation service.

* * *

RESERVE FUND

Balance, July, 1923..	$1,000,000.00
July, 1923, Loss......	285,004.74
Aug., 1923, Loss......	319,516.56
Sept., 1923, Loss......	251,688.05
Oct., 1923, Gain......	15,830.84
Nov., 1923, Gain......	83,410.50
Dec., 1923, Gain......	376,616.21
Profit and Loss Items Cr.	$7,393.09
Balance Dec. 31, 1923	$627,041.29
Balance, July 1, 1924	$1,000,000.00
July, 1924, Loss......	353,245.79
Aug., 1924, Loss......	445,820.47
Sept., 1924, Loss......	207,334.30
Oct., 1924, Loss......	36,155.55
Nov., 1924, Gain......	15,031.47
Dec., 1924, Gain......	305,503.75
Back Pay	$152,976.23
Profit and Loss Items Cr.	$51,865.43
Balance Dec. 31, 1924	$176,868.31

* * *

REAL SAFETY WORK

During the period from August 1, 1924, to December 1, 1924, 2,420,825 feet (B. M.) of ties and timber were handled at the Tie Plant, with only a single slight accident and no time lost.

J. DICKIE P.L. PERRON A.T. SPRAGUE E.L. LOCKMAN M.J. CURTIN W.C. SMITH A.S. HALL
A.J. BLACKBURN J.M. RYAN H.M. STEWARD A.L. BUTLER C.T. FERNALD

OFFICIALS OF THE MAINTENANCE DEPARTMENT

There was once written a song which ran something as follows:

> "Dr. Tinkle Tinker of old Toy Town,
> Everybody's Happy When He's Around."

The Maintenance Department tinkers here and tinkers there, but without the varied activities of this department the roofs of our buildings would leak, the escalators would run down like Grandfather's clock, and the cars would stray off the straight and narrow path. The activities of this department are more varied than other departments and require much planning and co-ordination in order to accomplish efficient and economical results.

These men are responsible for its work and average 48 years of age and 21 years of service:

H. M. Steward	Supt. of Maintenance
J. M. Ryan	Engr. Surface Lines
A. L. Butler	Engr. R. T. Lines
C. T. Fernald	Chf. Engr. Maint. Dept.
E. L. Lockman	Asst. Engr. Surf. Lines
W. C. Smith	Signal Engineer
James Dickie	Equipment Engr.
A. J. Blackburn	Architect
P. L. Perron	Supervisor Bldg. Mnt.
A. T. Sprague	Supervisor Struct. Mnt.
M. J. Curtin	Tie & Timber Agent
A. S. Hall	Chief Clerk, Maint. Dept.

* * *

FOUR GILLS

Astronomers have found indications that the satellite of Sirius, the Dog Star, although slightly larger than the earth, has nearly as great mass as the sun.

This indicates a state of matter almost inconceivable, for one pint of the substance of which this planet is composed would weigh 25 tons.

Just think of a pint of material weighing more than a centre entrance car.

FOREST HILLS GARAGE

The Boston Elevated Railway placed in operation Saturday, January 10, the first unit of the Forest Hills bus garage. During the experimental stages of bus operation it was necessary to house the buses in rented garages.

The housing of buses is an entirely different problem from the storage of ordinary automobiles, as one of these buses takes as much space as two ordinary pleasure cars, and for proper operation through the garage actually requires two and one-quarter times as much space as would be required by an ordinary pleasure vehicle.

The Forest Hills garage has probably the largest unobstructed floor space for garage purposes, approximately 20,000 square feet, at least in the New England states, if not east of the Mississippi.

The roof trusses have a span of 150 feet, which are the longest span roof trusses that we know of in a building.

The building is of fireproof construction throughout, with facilities for light repairs and inspection, proper washing and filling of buses. It is well lighted throughout during the day or night. Consideration has been given to the comfort of employes, in the way of proper washing and toilet facilities as well as shower baths and smoking room.

The dimensions of the building are 151 feet by 125 feet, 14 feet 6 inches high from the floor to the under side of the trusses, with the trusses 15 feet high at the center of the building. It will accommodate 42 buses.

A two-story portion comprises stock room, welding room, wash and locker rooms, adjoining the garage, 22 feet by 103 feet in area, and 18 feet in height. Driveways are provided so that the operation is carried on in a definite direction by means of large entrance and side doors. The buses are stored across the garage, between the doors, ready at all times for service. Provision is made by an island in the driveway for the proper filling of gasoline for the buses, rather than inside the building, to eliminate danger from fire.

This garage, with future additions for growth, will take care of the buses in the southern portion of the city. In order to take care of the buses in Somerville and Medford it is planned to build a similar unit at Salem Street, Medford. The cover design shows one view of the garage.

* * *

COURTESY IN 1924

The total complaints against employes for discourteous treatment of passengers was as follows:

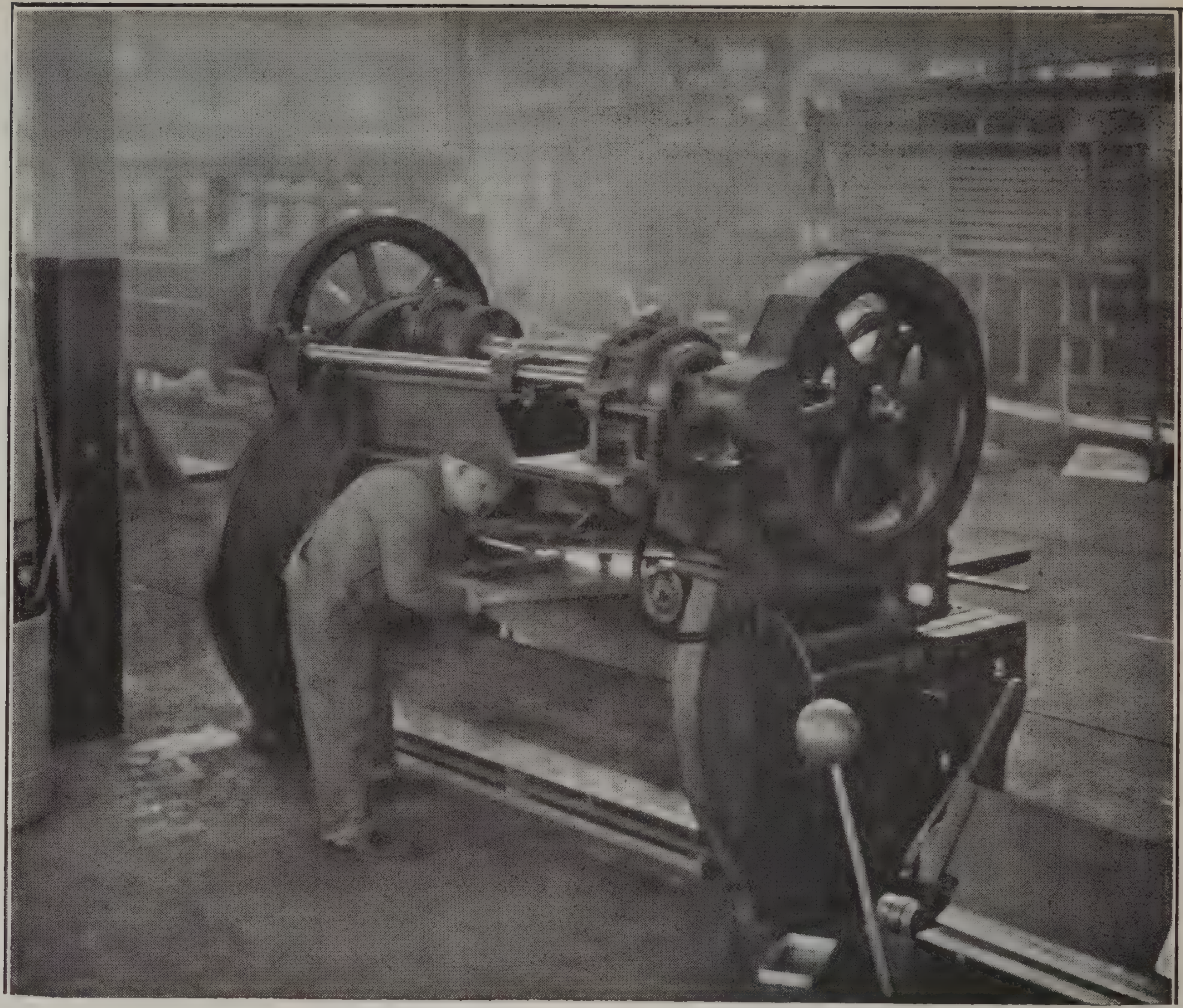
1919	1595
1920	1529
1921	1421
1922	1357
1923	1242
1924	1363

Last year in the February Bulletin the following was stated: "Let us leave no stone unturned to continue the gradual elimination of complaints by car riders and be known as the road of courtesy."

Notwithstanding what was hoped to bring about an additional effort to remove complaints for discourtesy the number for 1924 actually increased.

Let us pass by the poorer record for 1924 than for 1923 without comment and turn our efforts to 1925. Employes who cannot at all times be courteous to the car riding public are not deserving of an opportunity to serve the public on this railway. Let us resolve that there shall certainly be no reason to regret the efforts of 1925 when its record is turned in.

In 1923 there were 102 letters received at the General Manager's office commending the manner in which car service employes performed their duty, and 90 letters were received during the year 1924.



SQUARING SHEARS, EVERETT SHOPS

POWER SQUARING SHEARS

The illustration shows one of the new tools included in the equipment of the Everett Shops. It is called a power squaring shear and is used to cut up all kinds of sheet metal not over 3/16-inch thick.

A sheet of metal put into this machine is first automatically clamped into position and then a descending knife cuts off a strip of any pre-determined width from ½ inch up and can be varied with extreme accuracy by a finely adjusted gauge, to a variation of 1/16 of an inch.

The knife cuts a length of 96 inches at one operation and it is possible, provided the strip to be cut off is not over 15 inches wide, to cut up a sheet of indefinite length of subsequent cuts, by a gap provided in the frame which allows the sheet to move along for the next cut.

This machine is in almost constant use, as there is hardly an article made of sheet metal but what the material for same is first cut to size from the raw sheet by this machine. The first work on metal panels for side of cars, dasher signs, ventilators, cans and tank pans, start with this machine; over 3,000 panels alone are cut with this machine a year.

Its weight is about 12,800 lbs., and it is driven by a 7½-H.P. motor.

While we had a similar machine at Bartlett St., it was for much lighter weight metal and was badly worn and in such condition that it would not turn out accurate work.

It is fair to assume that the saving from this new machine over the old machine, due to more accurate work, speed of operation and finer adjustment of cutting edge, will pay for the cost of machine, which was $2,750, in less than two years' time.

SECOND GENERAL MEETING OF CONFERENCE GROUPS

Approximately 650 employes profited greatly by attending the second general meeting of the Departmental Conference Groups held on the evening of February 9th at the Sullivan Square Schoolroom.

General Manager Edward Dana presided and opened the meeting with a real surprise for the audience when he introduced the Division One Orchestra. These employes certainly upheld their excellent reputation and during the evening rendered many selections that were thoroughly enjoyed by the entire audience.

Mr. Henry I. Harriman, chairman of the Metropolitan Planning Division, explained the reasons for the appointment of the Planning Division. He also explained in detail the studies which the Division has already made of proposed rapid transit extensions to meet the immediate traffic needs of the district and spoke of the problems which must be solved in the near future.

Col. Thomas F. Sullivan, chairman of the Boston Transit Department, gave a very interesting outline of the development of transportation in and around Boston during the last half century, explained the different steps a legislative bill for the building of subways and tunnels goes through before it is enacted, methods of financing their construction and the manner in which they are ultimately paid for out of fares paid by the car riders.

He also described in an interesting manner some of the engineering problems encountered in actual construction work.

Mr. Howard Coonley, president of the Boston Chamber of Commerce and vice president of the U. S. Shipping Board, Emergency Fleet Corporation, during the war, dwelt on the benefits derived through genuine co-operation between employer and employe and cited some interesting accomplishments in this respect by one of the best known men in the steel industry in this country.

A motion picture film loaned by the General Electric Company of Boston, showing some of the national parks in this country, closed the meeting.

* * *

Not Understood

Not understood. We move along asunder
Our paths grow wider as the seasons creep
Along the years; we marvel and we wonder,
Why life is life, and then we fall asleep—
Not understood.

Not understood. We gather false impressions
And hug them closer, as the years go by,
Till virtues often seem to us transgressions;
And thus men rise and fall and live and die—
Not understood.

Not understood. Poor souls with stunted vision
Oft measure giants by their narrow gauge;
The poisoned shafts of falsehood and derision
Are oft impelled 'gainst those who mould the age—
Not understood.

Not understood. The secret springs of action
Which lie beneath the surface and the show
Are disregarded. With self-satisfaction
We judge our neighbors, and they often go—
Not understood.

Not understood. How trifles often change us!
The thoughtless sentence or the fancied slight
Destroy long years of friendship and estrange us
And on our souls there falls a freezing blight—
Not understood.

Not understood. How many breasts are aching
For lack of sympathy! Ah! day by day.
How many cheerless, lonely hearts are breaking!
How many noble spirits pass away
Not understood.

O God! that men would see a little clearer,
Or judge less harshly when they cannot see!
O God! that men would draw a little nearer
To one another—they'd be nearer thee
And understood.

ON THE SHENANDOAH

Mr. Junius B. Wood writes in the National Geographic Magazine of the 9,000 mile flight of the "Shenandoah," under the caption, "Seeing America from the Shenandoah."

The description of boarding the Shenandoah from the landing at the top of the mooring mast is of interest and reads as follows:

"Tell Mr. Wood to come aboard," came the order after a minute which seemed an hour.

"Glad to see you aboard," said Lieutenant Charles E. Bauch, assistant keel officer, in real ship greeting. His tall form stooped in the narrowing forward end of the tube. He waved a hand in the general direction of the dim aft.

"The captain says to go down the ladder into the control car," he said. "Leave your kit here until we get under way."

This is of interest because the naval officer who thus greeted Mr. Wood was none other than the son of Mr. Charles A. Bauch, Superintendent of Division 1.

* * *

NO EVIDENCE OF CO-OPERATION HERE

The following paragraph is quoted from a letter received at the General Office:

"On Monday night of the present week the writer was obliged to take three different cars in an endeavor to get home, because of some difficulty in the first two. The conductor of the second one admitted to a passenger that the cars were 'not as young as they used to be.'"

DECEMBER OPERATION

	1924	1923
Revenue exceeded cost of service......	$305,503.75	$374,464.85
Ratio operating expense to operating revenue	65.21%	62.59%
Operating revenue per car mile operated	66.21c	64.15c
Operating revenue per car hour (A. E. R. A. Standard).................	$6.30	$6.09
Revenue passengers	33,963,927	34,728,705
Per cent. 5c and 6c fare passengers....	19.08	26.25
Average fare per revenue passenger..	9.206c	8.687c
Revenue passengers per car mile operated	7.072	7.245
Car miles operated	4,802,673	4,793,372
Trips operated	609,959	571,024
Employes complained of by car riders	100	100
Complaints in regard to car service..	26	13
Average number of witnesses per accident	4.15	3.42
D. C. K. W. output gross for month..	27,255,415	25,444,175
Maximum K. W. hour load	82,700	82,965
Tons of coal consumed........................	24,024	24,223
Lbs. of coal burned per K. W. D. C. at cars	1.979	2.138
Revenue passengers carried per accident	43,599	40,382
Accidents per 10,000 car miles..........	4.32	4.65
Car defects per 10,000 car miles........	7.6	10.6

Feb. 20, 1925. EDWARD DANA, *General Manager.*

Vol. 4 MARCH, 1925 No. 3

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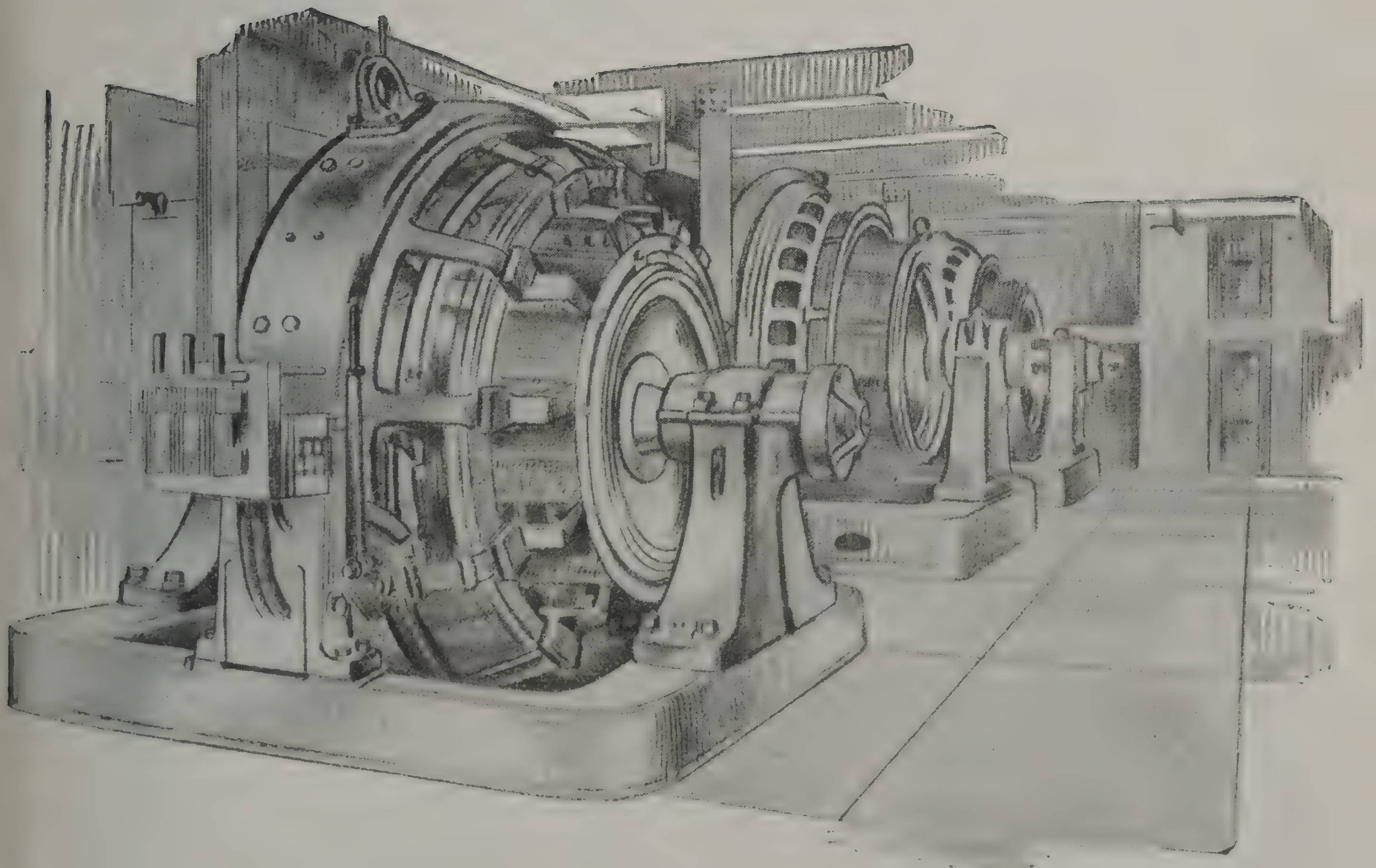
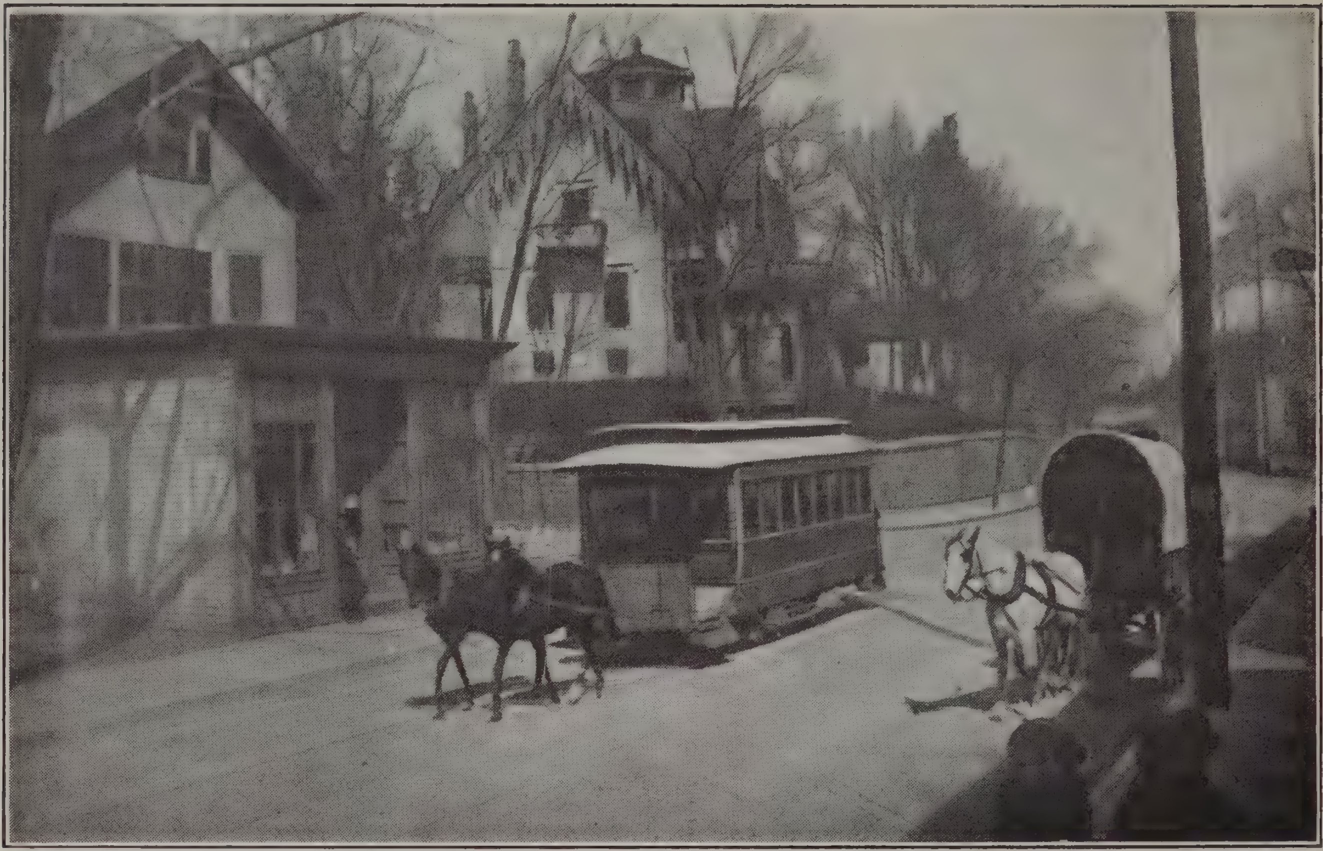
PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

CO-OPERATION

SERVICE
FOR THE
SAFE CAR RIDERS SURE
SATISFACTORY

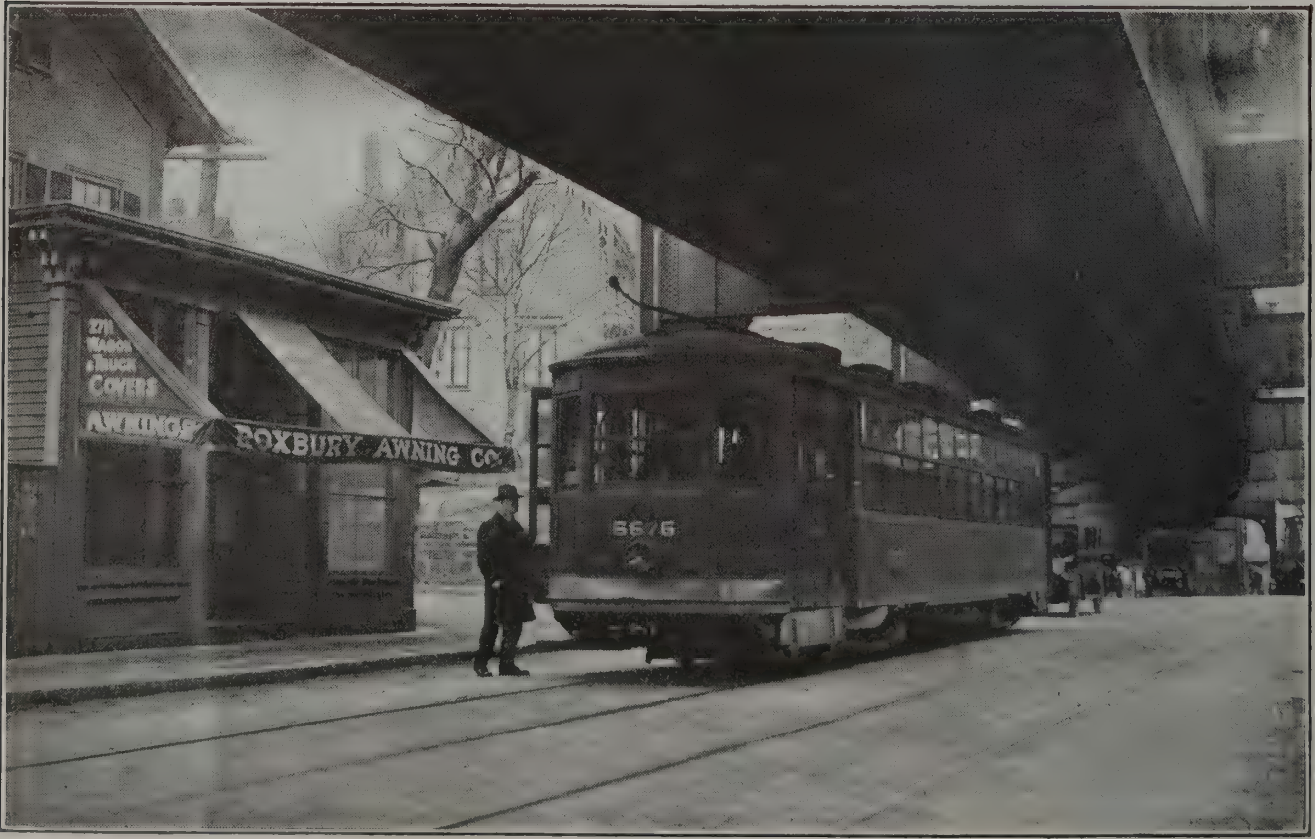




WASHINGTON AND OAKLAND STREETS, ROXBURY

The two cuts of this location are most interesting, one taken about 1883 and the other in 1925, a span of 42 years.

The two buildings you will note have not been changed. It is interesting to observe the growth of the tree at the corner of the building, the growth in the size of the trunk being very noteworthy. What a change has occurred in the street scene, comparing the old time horse car and meat wagon (now seldom, if ever, seen) on the one hand, with the latest type No. 5 car and motor vehicles and elevated structure overhead on the other hand.



"KNOW YOUR NEIGHBOR"

How many of us can remember in the days gone by the little industry employing say 50 or 75 men, in which the chief executive knew every one of his employes by name and always spoke to them when seeing them? I dare say we all can picture that very thing. In those days every man knew his neighbor and a spirit of friendliness existed throughout the whole organization.

What has happened to that small plant today? It has become a huge organization, employing thousands of men and women. It is the logical outgrowth of the small plant. But has the spirit of friendliness gone hand in hand with this growth? The general tendency has been in the other direction, that is, as the plant grows in numbers the employers and employes have felt that it was too much of a task to try to keep up the motto of "Know your neighbor" and that old spirit of friendliness. In its place has grown up a certain very erroneous belief that the employes were merely cogs in the organization.

At present, however, men are realizing that this is fundamentally wrong and are trying to overcome the tendency and bring back the spirit of friendliness.

If we look back at the small industries and see how they obtained the fine spirit among the men we will find it all comes down to the motto of "Know your neighbor." By expanding on this to keep up to the growth of business today we might change the motto to read, "Know your business neighbors."

If we keep this in mind and try to enlarge upon it, soon we will find that there are hundreds of friends and neighbors in our own organization that we had no idea existed, and a spirit of friendliness and contentment will prevail throughout our entire organization.

Contributed by an Employee.

COASTING RECORDERS

Coasting recorders are installed on cars to enable operators to have knowledge of the extent to which they are economizing in the use of electricity in the operation of their cars.

Rule 122—Economical Use of Power—has long been a standing rule but before coasting recorders were installed operators had no way of judging what the results of their efforts were.

Recently an operator was discovered who made a practice of tampering with the coasting recorders.

Whom was he injuring? Certainly not the management, for until they discovered the fact it was assumed he was making a good record and actually saving power.

He was really doing an injustice to his fellow workers and the car riders whom he is supposed to serve to the best of his ability.

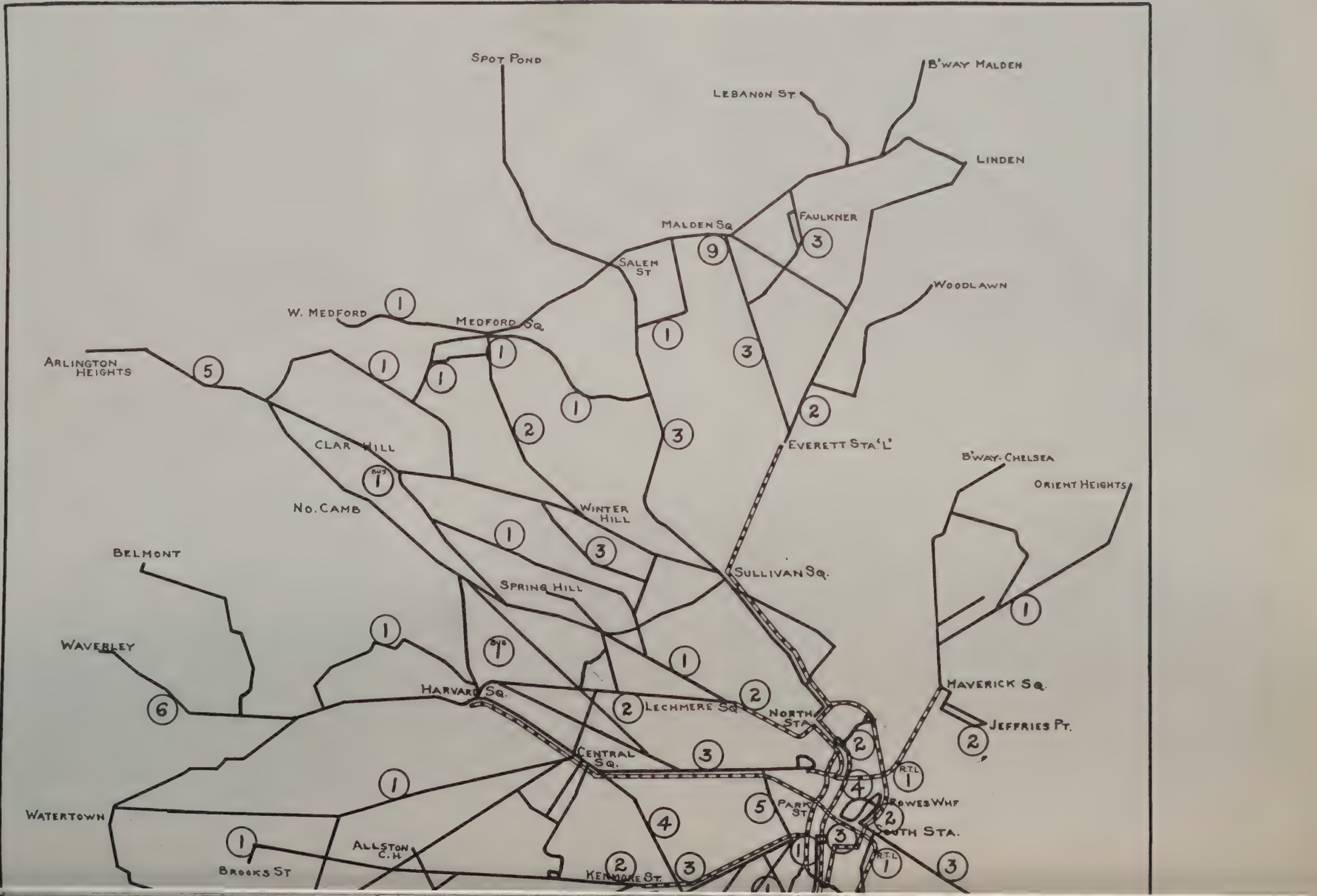
If the saving which he should have made was forfeited it added its bit to the burden of meeting expenses which has made necessary an increase in local fare and a layoff of personnel.

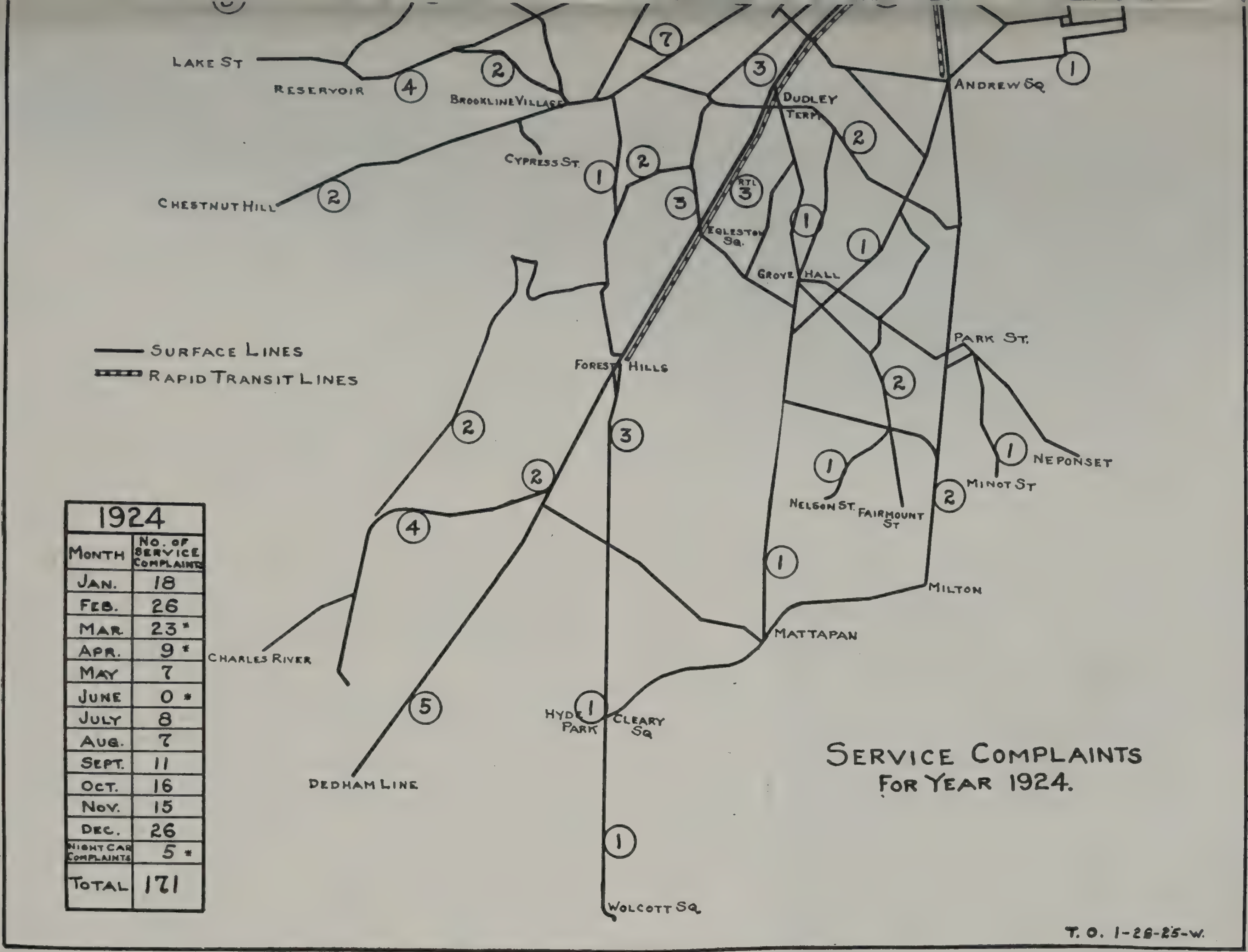
* * *

SERVICE COMPLAINTS

During the year 1923 there were 246 written complaints recorded in regard to car or train service. Every effort was made to improve conditions which could be corrected and in most instances the individuals were personally interviewed. During the year 1924 the number recorded was but 171 and the same policy was pursued. It would appear that our efforts to render satisfactory service were bearing fruit and continued effort to serve the car rider to the best of our ability should be exerted by every one of us.

The chart on the centre page shows by routes the number of complaints received.

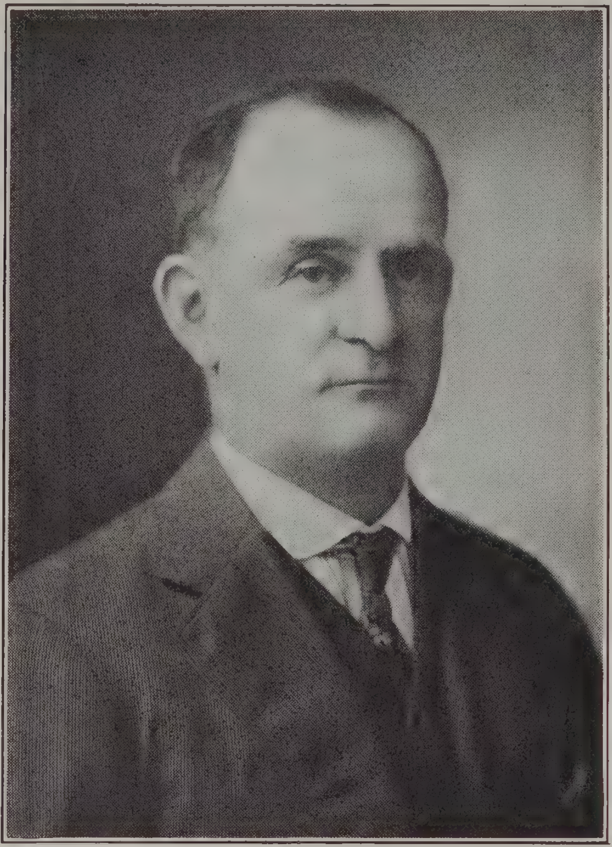

SPOT POND
B'WAY MALDEN
LEBANON ST.
LINDEN
FAULKNER
MALDEN SQ.
SALEM ST
WOODLAWN
W. MEDFORD
MEDFORD SQ.
ARLINGTON HEIGHTS
EVERETT STA 'L'
CLAR HILL
B'WAY-CHELSEA
ORIENT HEIGHTS
NO. CAMB
WINTER HILL
BELMONT
SULLIVAN SQ.
SPRING HILL
WAVERLEY
HARVARD SQ.
LECHMERE SQ.
NORTH STA.
MAVERICK SQ.
JEFFRIES PT.
CENTRAL SQ.
R.T.L.
ROWES WHF
WATERTOWN
PARK ST
SOUTH STA.
ALLSTON C.H.
BROOKS ST
KENMORE ST.
BUS



SERVICE COMPLAINTS
FOR YEAR 1924.

1924	
MONTH	No. of Service Complaints
JAN.	18
FEB.	26
MAR.	23 *
APR.	9 *
MAY	7
JUNE	0 *
JULY	8
AUG.	7
SEPT.	11
OCT.	16
NOV.	15
DEC.	26
NIGHT CAR COMPLAINTS	5 *
TOTAL	171

T. O. 1-28-25-W.



John Allison Smith
1868—1925

John Allison Smith passed away on March 14, 1925. He was born on February 28, 1868, and entered the service of the West End Street Railway Company as conductor in 1888; was obliged to resign on account of serious illness; returned again as conductor in June 21, 1893. He became Starter in 1896, was appointed Chief Clerk of Division Nine in 1897 and on November 1, 1907, he was made Superintendent of Division Nine. On November 1, 1919, he was appointed Assistant to Superintendent of Transportation and on July 1, 1924, was assigned as Assistant to the Supervisor of Timetables. He served the railway faithfully continuously for 31 years and his sudden death was a shock to his many friends in the organization by whom he was always held in high esteem.

DEWEY SUBSTATION

The cover design of this issue of Co-operation shows a view of the rotary converters installed in our Dewey Substation. The construction of this substation is unique, in that it is built underground between the Dorchester Tunnel and the street, being over the tunnel tracks. This station was first put in service on December 21st, 1916. The original equipment consisted of two 3,000 K. W. rotary converters. An additional 3,000 K. W. converter was installed in 1921.

Air is furnished for station ventilation and to the air-cooled transformers from the Dorchester Tunnel. Air for the transformers is provided through two blowers with a total capacity of 30,000 cubic feet of air per minute, and for the station by two fans with a capacity of 30,000 cubic feet each. The air as it enters the station through an opening at the easterly end, passes through air filters which remove the foreign matter. This is done by the air coming in contact with baffle plates which are coated with oil and to which foreign matter, particles of dust and metal from the rails, adhere.

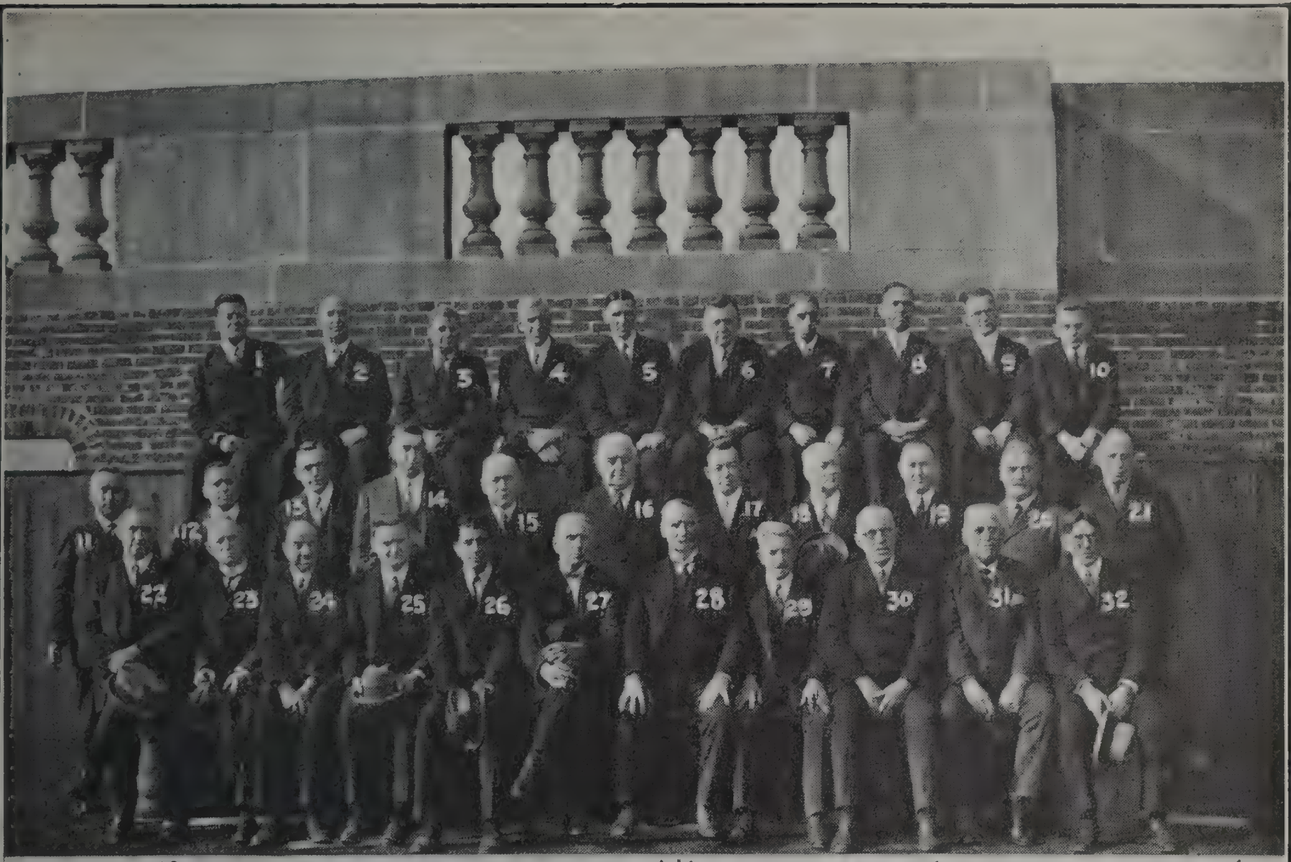
Alternating current is supplied to this station through six 13,200 volt cables, three being fed by the turbo-generator from the Lincoln Power Station and three from the generators at the South Boston Power Station. Alternating current is reduced by transformers to approximately 400 volts and is changed by the rotary converters to 600 volts direct current—the voltage of power as fed to the feeders and trolley for car service.

The output of this substation for the year 1924 was 20,648,700 K. W. H., an output only exceeded by our Egleston Substation.

EXCERPT FROM ADDRESS OF WILLIAM GREEN

President of the American Federation of Labor, Before the Harvard Union

"Organized labor recognizes and appreciates the value and importance of education. It believes that the workers can advance their economic and social interest through education and knowledge."



1 J.A.Griffin
2 A.J.Guyon
3 J.M.Knox
4 D.J.Griffin
5 E.R.Kelly
6 W.J.Carney
7 P.E.Maw
8 H.W.Putney
9 G.O.Nelson
10 B.S.Whiting
11 D.D.Hall
12 A.J.Scott
13 W.J.Timmins
14 F.H.White
15 J.H.Harrington
16 S.E.Walker
17 J.P.Banks
18 C.N.Congdon
19 A.J.Gillis
20 F.J.Banks
21 J.Hellender
22 S.P.Bowen
23 T.Connell
24 E.A.Kelley
25 H.P.Kelliher
26 J.H.McCarty
27 C.A.Bauch
28 J.Smith
29 F.A.McAvoy
30 F.R.Morgan
31 H.A.Pasho
32 A.W.Senter

OFFICIALS OF THE TRANSPORTATION DEPARTMENT

The officials of the Transportation Department are shown in the group and have averaged 29 years with the railway and average 50 years of age. Many of these men have seen this great system develop from modest beginnings, and have been responsible for the daily contact with the great volume of traffic handled year by year. Fires, delays, accidents and snow all contribute to the problems with which they have had to contend.

The list of the group follows:

J. A. Griffin	Supv. Division Four
A. J. Guyon	Supv. of Employment
J. M. Knox	Chief Clerk Division Four
D. J. Griffin	Chief Clerk, Division Three
E. R. Kelly	Dist. Supvr., R. T. Lines
W. J. Carney	Supv. Division Four
E. Maw	Dist. Supvr., R. T. Lines
H. W. Putney	Secy. Transportation Dept.
Geo. O. Nelson	Chief Clerk, R. T. Lines
B. S. Whiting	Traffic Engineer
D. D. Hall	Asst. Supt., R. T. Lines
A. S. Scott	Supt. Division Fonr
W. J Timmins	Chief Insp. R. T. Lines
F. H. White	Supv. Division Two
J. H. Harrington	Supt. Division Three
S. E. Walker	Dist. Supvr., R. T. Lines
J. P. Banks	Supv. Division One
C. N. Congdon	Chief Clerk, Division One
Angus J. Gillis	Supv. Division One
F. J. Banks	Dist. Supvr., R. T. Lines
John Hellender	Supvr. Division Three
Stephen Bowen	Supv. Division Three
Timothy Connell	Supv. of Timetables
E. A. Kelley	Asst. to Supt. of Transp.
H. P. Kelliher	Chief Clerk, Division Two
Jos. H. McCarty	Chief Clerk, Transp. Dept.
Chas. A. Bauch	Supt. Division One
James Smith	Supt. of Transportation
F. A. McAvoy	Supv. Division Two
F. H. Morgan	Supv. of Instruction
H. A. Pasho	Supt., Rapid Transit Lines
A. W. Senter	Supt. Division Two

* * *

EARTHQUAKE

On the evening of February 28, 1925, this section was visited by an earthquake, an unusual occurrence hereabouts. It became necessary as a precaution to make an inspection of our entire property in order that we might be assured that no foundations or structures had been damaged. The only evidence of damage apparently caused by the quake was a crack in the northwest corner of the Central Garage on Harrison Avenue, which was not of a serious nature.

WEIGHT OF COPPER

The total weight of copper in the transmission and distribution system of the Boston Elevated is 6,584 tons. Of this 511 tons is in trolley wire, 708 tons in transmission cables and 5,365 tons in the distribution system, including overhead and underground feeders and returns.

In the year 1923, 82 miles of trolley wire were installed, 91 miles of span wire and 41,900 trolley ears were used.

The No. 5 type car weighs 15 tons, so that the total weight of copper installed is the equivalent of the weight of 439 No. 5 cars.

CEMENT INDUSTRY

At the Maintenance Group meeting recently a film was shown of the cement industry. It was a source of surprise to those present to learn that the output of this industry is in the vicinity of 600,000,000 bags annually and that there are approximately 225,000,000 bags in use representing a cost of $30,000,000.

BE CAREFUL

Be careful in your words and actions not to cause displeasure to anyone.

JANUARY OPERATION

	1925	1924
Revenue exceeded cost of service......	$269,649.08	$125,758.50
Ratio operating expense to operating revenue	65.83%	70.17%
Operating revenue per car mile operated	65.27c	63.14c
Operating revenue per car hour (A. E. R. A. standard)...............	$6.25	$5.91
Revenue passengers............................	33,305,311	34,416,978
Per cent. 5c and 6c fare passengers..	19.49	27.13
Average fare per revenue passenger	9.186c	8.643c
Revenue passengers per car mile operated	6.973	7.161
Car miles operated............................	4,776,281	4,806,041
Trips operated......................................	606,938	573,263
Employes complained of by car riders	136	125
Complaints in regard to car service..	26	18
Average number of witnesses per accident	3.3	3.6
D. C. K. W. output gross for month..	29,251,555	28,272,065
Maximum K. W. hour load...............	85,660	86,245
Tons of coal consumed......................	25,445	27,326
Lbs. of coal burned per K. W. D. C. at cars...	1.95	2.17
Cost of power per K. W. H. for car service	.00835	.00978
Cost of power per rev. car mile.........	.0496	.0548
Revenue passengers carried per accident	31,097	36,928
Accidents per 10,000 car miles.........	2.24	1.94
Car defects per 10,000 car miles........	8.9	9.6

Mar. 28, 1925. EDWARD DANA, *General Manager.*

ol. 4 APRIL, 1925 No. 4

PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

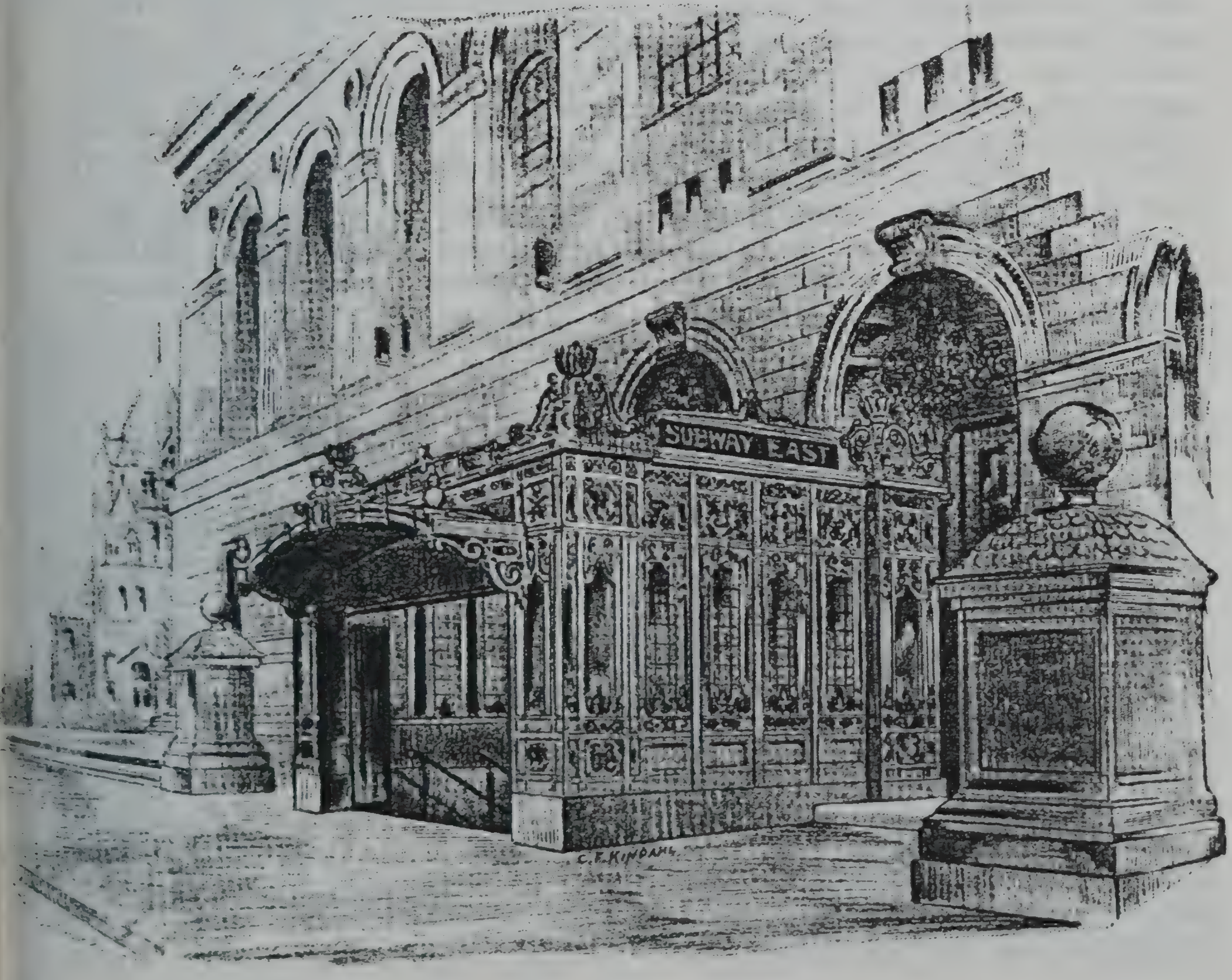
CO-OPERATION

SERVICE

FOR THE

SAFE CAR RIDERS SURE

SATISFACTORY



THIS MONTH'S COVER DESIGN

The picture on the preceding page shows a view of the Public Library entrance to Copley Station, Boylston Street subway.

This entrance is of particular interest in view of the fact that it is located in what has been considered for many years a center of architectural beauty. Copley Square was brought into prominence many years ago as an architectural center by the construction of Trinity Church, by the great architect Richardson, followed by the Boston Public Library, from designs by the famous architects McKim, Mead & White, of New York. In both of these structures the best talent obtainable was employed to attain the highest ideals of architectural and decorative design. It can be understood, therefore, that the Transit Department was confronted by a real problem to provide an acceptable exit and entrance from the underground station of the Boylston Street Station, which was built in 1915.

Sidewalk entrances to the subway stations up to that time had been usually nothing more than a simple covering over the stairways, and very little thought was given to having them harmonize with the surroundings. Realizing this problem, the Transit Department endeavored to utilize the hallway of the Public Library, but the trustees of the Library did not look on this with favor, and it was their suggestion that a suitable entrance be designed by the resident supervising architects for the Library, Fox & Gale.

The architects produced a glass and wrought iron canopy entrance, in keeping with the classic renaissance style of the Library, and so well did they accomplish the purpose that the structure has never looked out of place, but in fact harmonizes so well with the surroundings that to the average person it appears to be a part of the original Library design.

This proves that even so utilitarian a structure as a railway station entrance can be made a thing of beauty, and it also illustrates one of the many varied problems which have to be met by those entrusted with the laying out of a transportation system.

* * *

1925 BOWLING

The bowling season for 1925 has come to an end and the Rapid Transit Lines team comes out the winner of the Elevated League series. The league's final standing is as follows:

Team	Won	Lost	Pinfall
R. T. L.	101	19	42,006
Auditors	90	30	41,672
Geo. St.	88	32	41,421
Power	74	46	41,000
Division 1	73	47	40,970
Division 2	69	51	40,475
Repairmen	67	53	40,867
R. S. & S.	66	54	41,659
Steel Construction	59	61	40,387
Division 4	58	62	40,089
Division 3	55	65	40,157
Employment	48	72	39,569
Instruction	39	81	38,887
Sub Stations	30	90	37,971
General Manager	29	91	38,377
Claim	15	105	37,015

Following is the Boston Elevated team, which stands fifth in the 12-team Corporation League:

E. S. Lent	Clerk, Gen. Mgr.'s Off.
Jas. G. Murphy	Conductor, Division 4
T. J. Adams	Station Master, Div. 3
Chas. H. Rose	Employment Division
Jos. Donovan	Auditing Department
O. F. Doherty	R. T. L. Signal Dept.
Maxwell Wilson	Receiver, Division 4
R. J. McNeil	Power Department

The Maintenance Department League honors were won by Team D, captained by Ed. Thomas and the standing of teams is as follows:

Team	Won	Lost	Pinfall
D	69	39	33,966
G	65	43	33,945
I	62	46	33,508
C.	61	47	33,955
J	59	49	33,967
B	57	51	33,697
A	52	56	33,126
F	47	61	33,334
E	44	64	32,849
H	24	84	31,866

How the Wrecking Trucks Minimize Delays to Traffic

WRECKING TRUCKS IMPROVE SERVICE

Five years ago horse-drawn trucks were still largely in evidence on the Boston Elevated Railway, but in 1920 thirty-two motor vehicles of various types were purchased and many horses had to quit railroading. The new equipment comprised the followng:

Five 5-ton dump trucks.
Three 3½-ton wrecking trucks.
Two 3½-ton platform trucks.
One 3½-ton wire department truck.
Nine 2-ton tower trucks.
Two 2-ton platform trucks.
Two 2-ton covered express trucks.
One 2-ton army body truck.
Four ¾-ton express trucks.
Three ¾-ton switch repair trucks.

Five garages were built to accommodate these trucks, and a sixth was provided by partitioning off part of an existing building. This work cost $198,000 (not including the trucks).

As a result of this improvement maintenance expenses were reduced $85,000 per year.

For the present, attention will be focussed on the three wrecking trucks mentioned second on the above list. The others will be taken up in later issues of "Co-operation." These three are White trucks with special equipment as explained below. One is located at Broadway and Washington street, to cover the downtown district;

Wrecking Truck Always on Call

one at Grove Hall, for the south section of the system, and one at Sullivan square, for the north section. They replace not only horse-drawn vehicles but also wrecking cars to a large extent, being superior on account of their speed and mobility, combined with high power and ability to get out of the way of traffic.

These trucks carry every conceivable kind of equipment to make them useful in emergency, such as axes, crowbars, pinch bars, bolts, bolt cutters, wooden blocking, drawbar couplings, chains, chisels, fuses, drag-rope, hammers, skidding devices for broken axles, jacks, flashlights, lanterns, nails, pliers, picks, car replacers, rope falls, snatch-blocks, saws, shovels, trolley wheels, small trucks for broken axles on automobiles, washers, wire, wrenches, etc.

On each truck is a power crane or hoist, of capacity sufficient to lift one end of a street car. This is useful in picking up broken-down ends of automobiles, trucks and street cars, and either holding them while repairs are being made or pulling vehicles off the right-of-way. Derailed street cars can be replaced on the track. The crane can lift five tons, and with blocking under the rear end of the truck has lifted 10 tens.

On each side of the truck are two power-driven winches, like the crane supplied with power from the main engine. They have proved useful where ropes were required to pull derailed car trucks into position on the track, or to move obstructions from the track. In one case a motor-driven hose truck of the Boston Fire Department was pulled out of the Charles River by one of these winches.

Before these power-driven trucks were put into service it was customary to remove the load piecemeal from broken down vehicles, then getting the vehicles out of the way by man power and lifting jacks. This required time and frequently resulted in injury to the disabled vehicle. Now but a few minutes time is required and the vehicles are not damaged.

A good example of the work of these wrecking trucks was a case where a burning street car with a broken axle completely tied up traffic on a main line track. Within two minutes after the wrecker arrived the end of the burning car had been jacked up and shackled to one end of the wrecker. Traffic was moving and the burning car was being towed to a side track an eighth of a mile away.

An important feature of each of the wrecking trucks, added after they were in operation, is a complete acetylene cutting outfit. This is useful in such work as cutting through a piece of metal on a car truck, or cutting down a trolley pole, reducing lost time to a minimum.

Finally, and not least in importance, mention should be made of the safety feature of the power-driven equipment on these trucks. With them there is no need for the men to be near a wrecked vehicle while it is being raised by the power crane, whereas formerly men were frequently hurt while working under the vehicle with jacks, blocking, etc.

* * *

OUR MUSICAL CLUB

The Boston Elevated Musical Club will present "The Best Ever," a two-act musical comedy, at the Fine Arts Theatre, Boston, on Tuesday, Wednesday and Thursday evenings, May 12, 13, 14, 1925.

This is the first attempt on the part of our employes to present such a performance and the cooperation of employes of the entire railway is urged.

The cast includes some of Boston's best known amateur performers and all are employes.

THE LITTLE THINGS

"Ever so little means so much
In the little world of workaday;
The lips that smile and the hands that
touch,
The easier things. Not many such,
Easy or hard, in the common way
Ever so little means so much
In the little world of workaday.

"Ever so little, but how they aid,
The kindly glance and the friendly word!
The flash of an eye, and a debt is paid;
A syllable uttered—a friendship made
Or ever the syllable's clearly heard,
Ever so little, but how they aid;
The kindly glance and the friendly word."

¤ ¤ ¤

ELEVATED ORCHESTRA

The cut shows the orchestra which has added so materially to the success of the general meetings of all the group conferences at Sullivan square school room. The makeup is as follows:

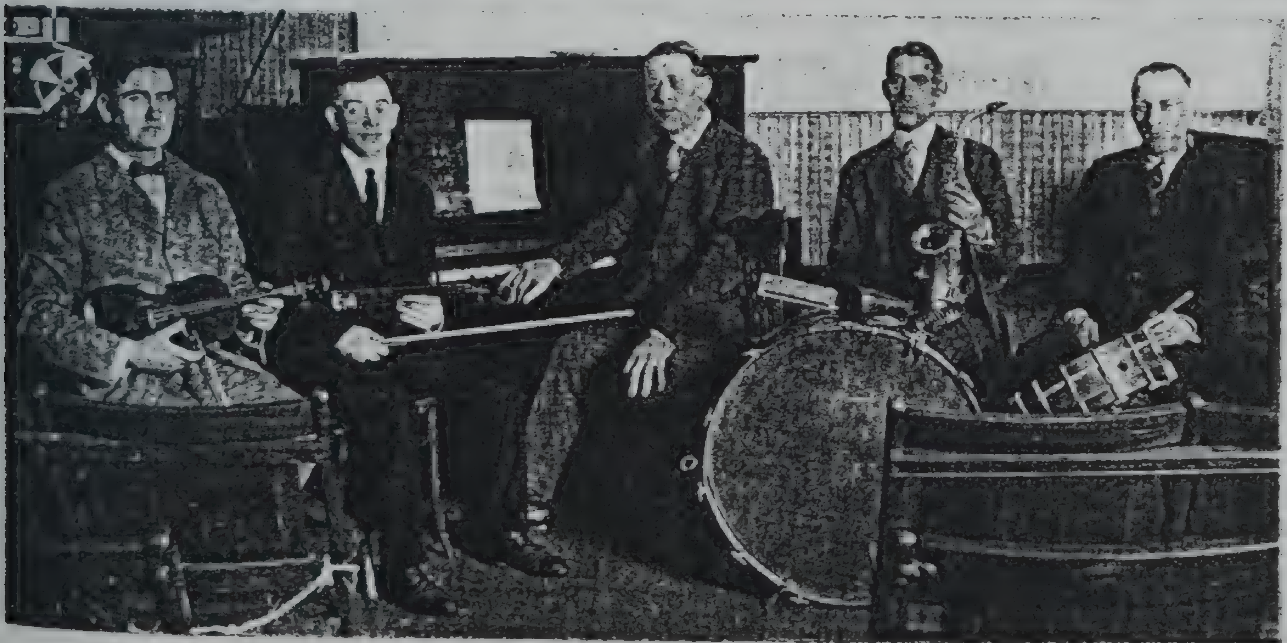
Violin, Dan Griffin, Harry Saunders.
Piano, Geo. Harrington.
Saxophone, E. L. Willson.
Drums, Harry Collinson.
Trumpet, Ralph Scott.

The leader is Willson, who, besides being a platform man, is the instructor of saxophone at the Toll School of Music. Before taking up railway work he was a professional musician, mastering successively piccolo, flute, violin and saxophone.

IT'S NOT WHERE YOU START FROM BUT WHERE YOU GO THAT COUNTS

At the general meeting of the departmental conference groups on March 27th, 600 men and women had an unusual opportunity to hear intimate talks from two railway presidents and an important official of a manufacturing company who delightfully told of their early experiences in electric railway work.

J. N. Shannahan, president American Electric Railwway Association, and a prominent railway president, described his own start as a street car scrubber at $1.25 per day, later becoming a machinist's helper. His master mechanic urged on him the value of education and he went to college, helping himself by working in spare time as a locomotive fireman. He said that the educational work of the American Association is its most important single activity. Mr. Shannahan, affectionately referred to as "Jack" by the other speakers, then showed how many successful railway operators had all started in humble positions and by honesty, courage and industry (the three cardinal virtues in Mr. Shannahan's opinion) had risen to positions of great influence. There is nothing, he said,



The Orchestra

that would prevent any ambitious railway employe from following in their footsteps. To quote him directly, "There is no one so humble or so poor that he cannot rise."

Myles B. Lambert, manager railway division Westinghouse Electric & Manufacturing Company, talked on the point of view in education. He started work as a steam railroad brakeman on the Brooklyn Elevated, becoming afterward telegraph operator, dispatcher and division superintendent. When electrical equipment came in he had to begin over again. He learned about electrical equipment with the Westinghouse Company, which sent him to Bosto install motors and control on the "Elevated." The work was discouraging, but pride kept him from giving up. He summed up his experience thus: "Any man is successful who accomplishes what he sets out to do."

L. D. Pellissier, elected March 27th president of the New England Street Railway Club, and president Holyoke Street Railway, told how he started as a conductor. He loved his job, which was much more congenial than the farm work of his boyhood. He became an office man and treasurer, in due course, of his company and has for some time been its president. He talked about cooperation, through which only it is possible to have a successful railway. A good point that he made was that if an employe is not happy in his work and loyal to his employer it is best for himself and his company that he seek a new job.

As presiding officer, Mr. Dana expressed appreciation of the frankness with which the speakers had discussed the subject of self-improvement. The men, he said, who are trying to push the educational work of the American Electric Railway Association have nothing to gain from it personally. They are actuated solely by a desire to help their fellow workers. Then, he said, also, "We all owe a great deal to electricity. It has made great opportunities for us all."

Taken as a whole, the talks formed a marvellous testimonial to the value of education. Everyone who heard them is bound to be happier and more efficient in his work. Employes who were not present can catch something of the spirit of the meeting even from the meagre abstract above.

Accompanying the talks was excellent music from the Division 1 orchestra, and H. M. Heald of the General Manager's office sang baritone solos with power and feeling, assisted at the piano by Frank P. Pickett of the general manager's office. The whole company joined in popular songs.

A motion picture film illustrating the cotton industry from the planting of the seed to the shipping of the finished fabrics concluded the program.

* * *

PASSENGERS CARRIED ONE MILE

A recent report of the Boston & Maine stated that according to the Interstate Commerce Commission accounts, 772,430,442 passengers were carried one mile on that system in 1924. Figuring in a comparative way we find that on the Elevated system 1,438,696,096 passengers were carried one mile in 1924, indicating the intensity of traffic movement on an urban trolley system as compared with a large steam railroad.

* * *

The man who is loyal will be with you when you are up, and he will be with you when you are down, because he has in him that which is finer than wealth or glory. He has in him an appreciation of the finer things of life, a regard for his fellow beings.

E.F.LIVINGSTON L.H.BUTTERWORTH M.F.DOYLE D.F.LEE J.P.SHEA
M.P.SPILLANE R.A.SEARS J.J.REYNOLDS

CLAIM DEPARTMENT OFFICIALS

The cut introduces the officials of the Claim Department, from whom you have been hearing in the series of Accident Bulletins during this Winter. This group of young men average 28 years in service and have been very much gratified at the interest which has been displayed in the series of Accident Bulletins.

The organization of the department is as follows:

R. A. Sears, General Claims Attorney.
L. W. Butterworth, Claims Attorney.
J. J. Reynolds, Claims Attorney.
M. P. Spillane, Claims Attorney.
M. F. Doyle, Chief Investigator of Claims.
E. F. Livingston, Chief Investigator of Litigated Claims.
J. P. Shea, Property Claims Agent.
D. F. Lee, Chief Clerk.

* * *

CONFERENCE GROUPS HOLD CLOSING SESSIONS

The several series of group conferences are closing in different ways, appropriate to the nature of their respective programs. The women's group concluded first, on March 2nd, with a buffet supper, musical and literary program, and dance. This marked the close of a series of ten conferences, the scheduled speaker for the evening being Mr. Dana, who explained the general plan of the group conferences which had been held in the different departments, and emphasized the benefits to be derived from educational work of this sort. The trustees were represented by Messrs. Miller and O'Hare, both of whom spoke briefly. Mr. Miller stressed the value of the good fellowship which accompanies such gatherings as had been held by the women employees, as well as their educational benefit. Mr. O'Hare showed how industrial education is spreading the benefits of mental training throughout large groups of ambitious men and women, with great benefit to society.

The women's group closing meeting was attended by about seventy women and a number of guests, making a total of ninety. The men who had spoken before the groups, and the heads of departments which had furnished speakers had been invited, and the whole railway organization was well represented.

The entertainment program included musical, orchestral and solo numbers, community singing, readings, solo dancing and general dancing. The orchestra pictured elsewhere in this issue was a feature of the evening. All entertainment was furnished by "home talent." Carnations were freely used in the decorations and were distributed to all.

The maintenance group closed its meetings on April 21st, with a supper and entertainment. Two hundred members and guests sat down to a varied collation, enlivened by music furnished by an orchestra made up largely of maintenance department talent. Superintendent Steward, Trustee O'Hare, General Manager Dana and H. H. Norris made brief after-dinner addresses. A pipe was presented to Walter Smith in appreciation of his work in decorating the hall, arranging for the radio and sound amplifiers, and in general for his efforts to make the group conferences a success. A check was handed Chairman Flaherty as a testimonial to his self-sacrifice on behalf of the group.

Chairman Flaherty reviewed skillfully the season's program and an interesting entertainment followed. Details of these features, together with an account of the closing exercises of the other groups, will be given in a later issue.

Certificates will be awarded promptly to all who attended a reasonable percentage of the season's meetings.

FEBRUARY OPERATION

	1925	1924
Revenue exceeded cost of service......	$118,183.05	$19,247.66
Ratio operating expense to operating revenue	67.36%	72.23%
Operating revenue per car-mile operated	64.96c	64.10c
Operating revenue per car-hour (A. E. R. A. standard)..............	$6.21	$6.06
Revenue passengers	29,826,343	32,525,051
Per cent 5c and 6c-fare passengers....	19.21	27.02
Average fare per revenue passenger	9.200c	8.649c
Revenue passengers per car-mile operated	6.927	7.263
Car-miles operated	4,305,828	4,477,538
Trips operated	547,447	531,925
Employes complained of by car riders	103	106
Complaints in regard to car service..	15	26
Average number of witnesses per accident	3.1	3.3
D. C. K. W. output gross for month..	22,474,915	27,475,975
Maximum K. W. hour load.................	84,580	84,650
Tons of coal consumed........................	20,130	26,627
Lbs. of coal burned per K. W. D. C. at cars	2.001	2.171
Revenue passengers carried per accident	33,288	24,200
Accidents per 10,000 car-miles............	2.11	2.81
Car defects per 10,000 car-miles........	7.9	10.5
Operating and maintenance cost of power, including depreciation:		
Per K. W. H. for car service........	0.972c	1.017c
Per revenue car-mile....................	4.89c	5.97c

April 28, 1925. EDWARD DANA, *General Manager.*

Vol. 4 MAY, 1925 No. 5

*9388.744 no. 5

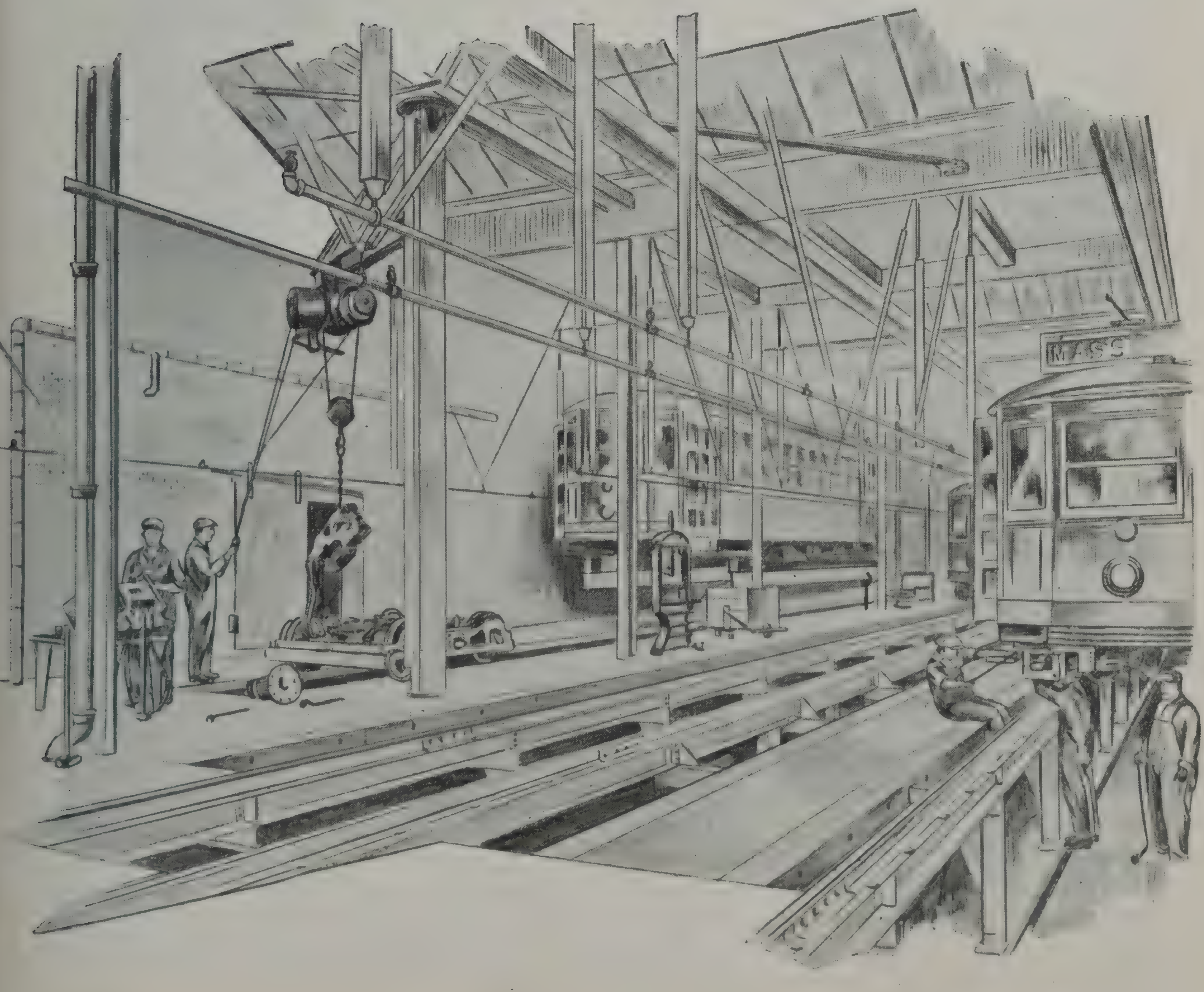
PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

Jan. 7, 1934

CO-OPERATION

SERVICE
FOR THE
SAFE CAR RIDERS SURE
SATISFACTORY



A MODERN PIT ROOM

If one visits our more modern carhouses and looks over the facilities provided for the inspection and maintenance of cars and compares these facilities with that provided 25 years ago, he will at once realize that improvements on car design and improvements on the inspection and care have advanced together.

Twenty-five years ago, with cars almost equal in weight to our latest of cars, the only way for lifting car bodies, motors and trucks was by hand hoist. It would take sometimes four men on chain hoists, two on each side, to lift a car body from the trucks. Pit floors were flush with rail and in order to work on some parts of the car the men were required to work in such a cramped position that the progress of the work was slow and the workman was liable to accident if the car was started while he was working.

The cover design shows the pit room at Park Street, Dorchester, and gives an excellent idea of some of the changes in a modern pit room in order to improve conditions for the men to carry on their labors and to relieve them of the extremely arduous work which in former years they were called upon to do owing to lack of modern facilities.

In the background in the center of the picture will be seen one of our latest types of cars, raised on a body hoist with the two trucks run out from under the car. This hoist consists of two 12″ I beams upon which rest two cross beams supporting the car and is raised by four large screws operated by a motor beneath the floor. By pressing a button, a single workman can raise the body of one of our heaviest cars in a few moments.

At the left of the picture and over the trucks that have been run out will be seen a five-ton crane which has just raised the motor out of the truck by simply pulling one of the cords seen in the operator's hand. This motor, when raised, can be swung around in a circle and placed where it can receive necessary attention. One motor has already been placed on the stand at the left of the picture, where it is being worked on without requiring the workman to stoop.

In the center of the picture will be seen the modern pit construction, the rails resting on steel girders running longitudinally with the rails and supported at intervals on steel horses.

The pit between the rail is 4′ 6″ deep and provides means for the workmen to go under a car to inspect and adjust any of the equipment. The narrower pits on the outside of the rail are called legholes and their use can be best explained by observing the man at the right of the picture who is sitting on the edge of this hole and adjusting a nut on the step operating mechanism. It can plainly be seen how much more cramped his work would be if the floor was level with the rail instead of dropped 10″ below the top and there was no place to put his feet, as was the case with the old type of pits.

Another tool which has recently been installed to help the men with their work is the press for pressing in and out bearings which, when done by hand in former days, might take as long as 30 minutes and can now be done with this 4-ton press in a few minutes. This press is shown standing on the floor just under the front of the car raised on the body hoist and in addition to its use in connection with bearings, it can be used to straighten trolley poles or any other piece of metal that has become bent.

In the design of a modern pit room, ample light is provided for, as will be seen by the cut which was made from a photograph taken by the natural light of the pit room.

C. W. Hamilton M. J. Horgan F. W. Amadon R. W. Marsh
Miss U. L. Ford Mrs. H. M. Freeman Miss J. M. Fitzmaurice M. H. Cullen J. H. Moran
D. F. Davies Miss A. J. Walsh Miss M. F. Cronin

Danger from fire is reduced by the use of concrete and steel in the construction of floors and sprinkler pipes are provided under the pit floor, at the ceiling and between the cars. Drainage is provided in each pit to carry off any water dripping from cars and sufficient heat is installed under the floor to make working conditions comfortable in winter.

THE BUREAU OF AUDIT

The above cut shows the men and women responsible for the administration of the Accounting Department of the Railway. Many changes have occurred in the organization and in the methods and practices of this Department during the past few years. Formerly the Department was composed entirely of male employes but the introduction of modern accounting methods and the substitution of machines and mechanical devices for manual, clerical and accounting work has resulted in the employment of a large number of women in substitution for men and it is very gratifying to the management to note that a number of executive positions in the Department are now capably filled by women.

J. H. Moran	General Auditor
D. F. Davies	Asst. General Auditor
M. H. Cullen	Supervisor Rev. Accts.
R. W. Marsh	Supervisor Gen. Accts.
F. W. Amadon	Insurance Clerk
M. J. Horgan	Chief Clerk
C. W. Hamilton	Chief Clerk
Miss A. J. Walsh	Chief Invoice Clerk
Miss M. F. Cronin	Chief Pay Roll Clerk
Mrs. H. M. Freeman	Forewoman
Miss J. M. Fitzmaurice	Forewoman
Miss U. L. Ford	Head Stenographer

GLASS

It is interesting to note that the weight of glass in the windows of cars, trains and buses operated on the Elevated system amounts to 662 tons, an equivalent weight to a line of 44 No. 5 type cars extending from Arlington Street entrance to the Subway, 1980 feet out Boylston Street as far as Dartmouth Street.

The cost of this glass represents an investment of $93,246.75.

Accidents result in breakage amounting to $15,490 annually.

Every pane of glass broken causes an increase in the operating expenses.

OUR PAY ROLLS

Our timekeeping and pay roll system is of course of vital importance. Upon the efficiency and accuracy of that system depends the assurance of the receipt of correct wages and the elimination of errors. But even of more importance is the moral effect of an efficient system and every effort should be made to develop a system in which all can have confidence.

With this object in mind, this railway in 1914 made a careful study of the subject. At that time each Division was responsible for its own pay roll and employed its own pay roll clerks who received the report of time from the Station Masters and proceeded to make up the pay roll. Early in the study it became apparent that the first thing to do was to build up a proper foundation for a pay roll system by obtaining in so far as possible a standard method of assignment of work on the entire system.

The standard methods of assignment of work which exist today were developed and upon this foundation our whole pay roll system is built.

As a result of this study the pay roll work for transportation employes was coordinated at one central office in 1917, thus bringing its supervision under one head and providing facilities for maintaining a high standard of pay roll construction. At this time a change was made from the old time sheet methods of timekeeping to a card system. Modern machinery was installed for carrying out this system in an economic manner and this equipment has been enlarged and improved until today this railway has one of the most modern and complete outfits for pay roll work in this country, consisting of two Graphotype machines for making plates from which cards, pay rolls and other forms are printed, one automatic addressograph for printing cards, envelopes, etc., four addressographs for the printing of other forms, five Burroughs Duplex Pay Roll and Adding machines for pay roll posting and footing and seven Comptometer non-listing calculat-

Printing Room—Payroll Department

ing machines for rapid calculating and adding.

Shortly after the consolidation of the various pay roll branches of the Transportation Department, the pay roll construction work of the other departments was taken over and all pay roll construction is now done at the Pay Roll Office.

By the use of Graphotype machines the names of all employes are stamped on metal plates and for employes of the Transportation Department the hours of duty are also stamped. These plates are inserted in specially constructed frames for use in printing machines. By these printing machines a time card is printed for each day for each transportation employe and a card for each week for each employe of the other departments, as a daily system of time keeping is in use for the Transportation Department and a weekly system in all other departments. These cards are then sent to the particular location where the time is kept by the Station Master or others whose duty it is, and after being filled out, returned to the Pay Roll Office where the entries are carefully checked up and computation of time and wages made by a carefully trained and efficient corps of clerks and any errors of timekeepers rectified in so far as possible.

At the end of the week the total hours worked and wages for the week are transferred, by use of specially constructed machines, to the pay roll, and the cards and pay rolls forwarded to the Bureau of Audit where the work of the Pay Roll Office is also carefully checked.

The pay rolls are then forwarded to the paymasters to be paid off and the cards returned to the Pay Roll Office for final filing and storage.

It is believed that errors have been reduced to a minimum and that the results of our system are very satisfactory considering the many complications involved by the local conditions existing on this property.

* * *

SUCCESS MAXIMS

1. Be ready for your opportunity when it comes.

2. Learn to understand orders and carry them out literally.

3. Don't agree to do a thing unless you are sure you can do it.

4. If you agree to do a thing, be sure to carry out your promise fully. If you find, however, that you cannot carry out your promise as you agreed, advise the person to whom you made the promise just as soon as you find it out yourself.

5. Don't try to do something until you thoroughly understand what is wanted. It would be better to say that you don't know, rather than to let the person giving the instructions assume that you do, because otherwise you would make a mess of it and would be sorry afterward.

6. It is well to observe as many successful persons as possible, learn how they conduct themselves and their business, and from these observations form your own policy or method. This can be done quite readily if you will give it the necessary attention, and, when the opportunity comes to you, you will be ready for it.

* * *

THE BEST EVER

The musical comedy, "The Best Ever," was presented by the Boston Elevated Musical Club under the direction of Mr. Eugene McDonald, at the Fine Arts Theatre on the evenings of May 12th, 13th, and 14th.

The success of this production, the first attempted by our Musical Club, is evidence of the spirit of co-operation which permeates our entire organization.

The cast, made up of employes from many departments, including some from our official family whose appearance at least added an element of surprise to the show, was warmly applauded throughout the performances.

All concerned are to be commended for their successful efforts.

INVENTORY OF EQUIPMENT

West End Street Railway
Sept. 30, 1889

7728	Horses	$1,035,552.00
1841	Cars	1,599,573.64
	Vehicles	190,342.59
	Gen. Equipment	187,361.90
		$3,012,830.13

The comparison of the rolling stock equipment in 1889 and 1924 indicates the changed condition of street railway service in the last 35 years. An investment in horses, cars, vehicles and general equipment of $3,012,830.13 has been supplanted by an investment in rolling stock and equipment of $24,966,763.74 and there are many on this railway who have observed this change gradually but consistently taking place during these few years.

Boston Elevated Railway
Dec. 31, 1924

56	Horses		$ 8,394.24
1652	Surface Passenger Cars	$16,100,516.90	
468	Rapid Transit Passenger Cars	6,544,384.65	
207	Service Cars—Surface Lines	821,323.44	
28	Service Cars—Rapid Tr. Lines	140,209.21	
2355	Total Cars		$23,606,434.20
35	Passenger Motor Buses		222,663.64
129	Automobiles and Auto Trucks		302,732.92
	Shop Equipment		631,942.46
	General Equipment		194,596.28
			$24,966,763.74

O BEAUTIFUL BANNER

O land that we love with a banner so fair,
Resplendent in beauty it floats on the air,
And dear to each patriot ever will be
The home of our fathers and flag of the Free.
O beautiful banner in glory unfurled,
The standard of Freedom, the pride of the world.

Beneath its bright stars gather aged and youth,
Its colors proclaiming Right, Honor and Truth,
The dread of the tyrant throughout every clime,
Our standard floats on with its mission sublime.
O beautiful banner in glory unfurled,
The standard of Freedom, the pride of the world.

The Red White and Blue with its regal renown
Are emblems of Liberty's sceptre and crown,
O'er brave men and heroes on our favored shore
May stars of its glory shine on evermore.
O beautiful banner in glory unfurled,
The standard of Freedom, the pride of the world.

Contributed by an Employe for Flag Day, June 14.

CONFERENCE GROUP SESSIONS CLOSED

The final meeting of the Rolling Stock and Shops Group Conferences was held on April 29th after a series of 16 lectures applying chiefly to material, engineering and mechanics of the department. This meeting was held at the school and took the form of a dinner and musical entertainment and a moving picture was the final feature.

On April 22nd the Transportation Group closed its series of meetings. At this meeting Mr. Senter read his paper on dispatching and maintaining schedules and it was addressed by Mr. J. Frank O'Hare, Trustee; Col. Thomas F. Sullivan, Chairman Transit Department; Hon. Russell A. Sears, General Claims Attorney; Mr. D. J. Curley of the Transportation Department and Mr. Edward Dana, General Manager. A very interesting musical entertainment was provided by Don Ramsey and his radio four and the saxophone quartette from the 110th cavalry band and most entertaining sketches by Thomas Hogan, Conductor 3353. It closed with a two-reel moving picture entitled "Air Pockets."

MARCH OPERATION

	1925	1924
Revenue exceeded cost of service......	$211,955.71	$75,777.79
Ratio operating expense to operating revenue	66.76%	72.25%
Operating revenue per car-mile operated	63.07c	63.32c
Operating revenue per car-hour (A. E. R. A. standard)...............	$5.90	$5.92
Revenue passengers	32,338,441	34,769,274
Per cent 5c and 6c-fare passengers..	19.19%	27.14%
Average fare per revenue passenger	9.199c	8.643c
Revenue passengers per car-mile operated	6.739	7.192
Car-miles operated	4,798,747	4,834,176
Trips operated	614,523	574,467
Employes complained of by car riders	120	145
Complaints in regard to car service..	18	27
Average number of witnesses per accident	3.88	3.63
D. C. K. W. output gross for month..	22,989,830	26,041,280
Maximum K. W. hour load................	83,000	78,920
Tons of coal consumed......................	20,565	25,194
Lbs. of coal burned per K. W. D. C. at cars	2.009	2.172
Revenue passengers carried per accident	36,916	34,087
Accidents per 10,000 car-miles..........	1.82	2.11
Car defects per 10,000 car-miles........	6.0	8.7
Operating and maintenance cost of power, including depreciation:		
Per K. W. H. for car service......	0.976c	1.082c
Per revenue car-mile	4.51c	5.55c

THE BOSTON ELEVATED RAILWAY BOWLING LEAGUE

The 1924-25 season of the Boston Elevated Railway Bowling League came to a close on Thursday evening, May 7th, when about 150 bowlers and friends met at Minot Hall.

After a very enjoyable dinner the gathering listened to Mr. S. L. Powers, Trustee, who called attention to the very close and loyal friendships that are formed among competing athletes and also recalled some very interesting incidents that occurred forty years ago when he was an active member of a bowling league.

Trustee J. F. O'Hare commended the members and officers of the league for their loyalty and sportsmanship in seeing the season through to a successful finish and expressed his belief that this loyalty prevailed throughout the entire organization.

General Manager Edward Dana also commended the members of the teams for their fine spirit of co-operation in completing another season and expressed the wish that the same teams would be in the field again next year.

Prizes were awarded to the members of the three leading teams and also to the individuals with the best averages. Entertainment was furnished by members of the teams and music was provided in the usual first-class manner by Division One Orchestra.

APRIL OPERATION

	1925	1924
Revenue exceeded cost of service......	$130,636.68	$16,404.23
Ratio operating expense to operating revenue	68.56%	72.31%
Operating revenue per car-mile operated	62.58c	62.01c
Operating revenue per car-hour (A. E. R. A. standard)................	$5.93	$5.92
Revenue passengers	30,971,113	33,018,456
Per cent 5c and 6c passengers...........	18.08	27.17
Average fare per revenue passenger	9.250c	8.641c
Revenue passengers per car-mile operated	6.645	7.039
Car-miles operated	4,660,538	4,690,546
Trips operated	597,406	570,726
Employes complained of by car riders	101	116
Complaints in regard to car service..	22	10
Average number of witnesses per accident	3.6	3.6
D. C. K. W. output gross for month..	19,709,130	21,525,915
Maximum K. W. hour load.................	65,540	79,120
Tons of coal consumed.......................	17,404	21,350
Lbs. of coal burned per K. W. D. C. at cars	1.983	2.227
Revenue passengers carried per accident	33,664	36,324
Accidents per 10,000 car-miles..........	1.99	1.94
Car defects per 10,000 car-miles........	5.6	7.0
Operating and maintenance cost of power, including depreciation:		
Per K. W. H. for car service......	1.05c	1.18c
Per revenue car-mile	4.24c	5.11c

May 29, 1925

EDWARD DANA, *General Manager.*

X 9388.744625

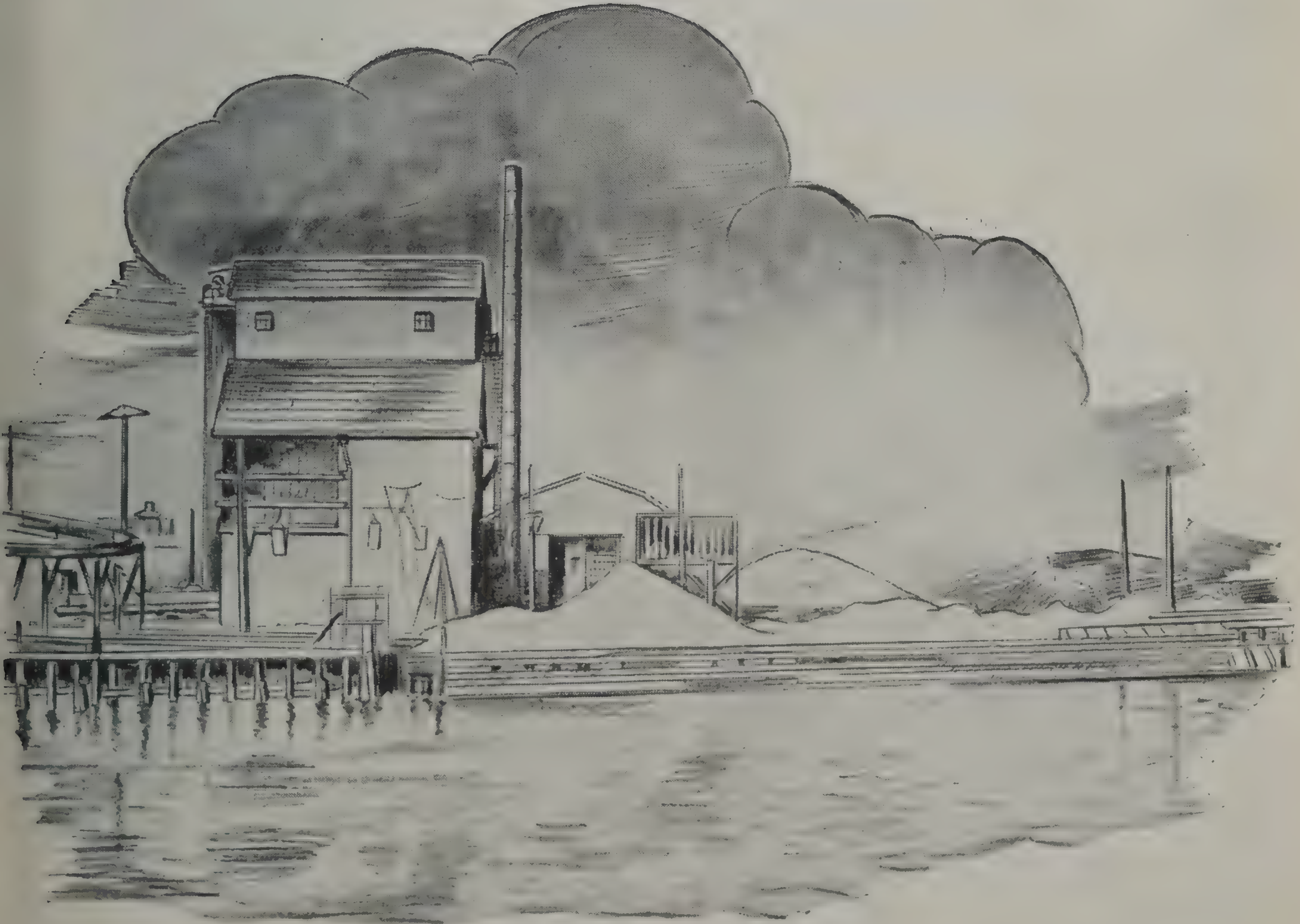
Vol. 4 JUNE, 1925 No. 6

PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

CO-OPERATION

SERVICE
FOR THE
SAFE CAR RIDERS SURE
SATISFACTORY



SAND PLANT AT GEORGE STREET YARD

The cover design shows a view of the sand drying plant located on the water front at George Street Yard which was placed in service October 29, 1912. The cost of the plant to December 31, 1924, was $32,707.00.

The sand is obtained from the Merrimac River on the northeasterly end of Plum Island and is conveyed to the sand plant by means of boats specially built for carrying sand.

The method of obtaining the sand is as follows:

The boats anchor in the river and a clam-shell bucket on the mast boom is dropped over the side and takes about 1¼ tons at a bite. The boats have a capacity of approximately 600 tons and it requires 4½ hours to load a boat. It takes about 5½ hours to make a trip from Plum Island to Boston and the time required to unload a boat is about 3¾ hours, using the same bucket as was used in loading the boat.

The sand is unloaded into a large hopper located on the wharf. The top of this hopper is level with the bulkhead. From the bottom of the hopper in a tunnel connecting the hopper with the drying house, a horizontal belt conveys the sand to a vertical elevator. The height of this vertical elevator is approximately 75 feet and it will handle approximately 110 tons of wet sand per hour. The sand drops into a "V" shaped storage bin of 950 tons capacity. From the bottom of the bin the sand drops by gravity directly into one end of the drying drum. This drum is 5 ft. in diameter and 30 ft. in length and is slightly elevated on the receiving end so that as the drum slowly revolves, channels located around the interior of the drum pick up the sand and slowly work it to the rear of the drum where it drops into a pit and another vertical elevator lifts it to the dry sand bin of 650 tons capacity.

Heat for drying the sand is taken from a furnace fire located at the discharge end of the drum and the heat from the furnace passes through the drum and thence into a smoke stack located on the opposite end of the drum. The heat extracts the moisture from the sand.

It may be interesting to note that wet sand weighs 2,430 lbs. per cu. yard and dry sand has a weight of 2,740 lbs. per cu. yard. The sand is dried at the rate of 12 to 15 tons per hour. The amount of wet sand received per year is approximately 32,813 tons and of this amount 17,101 tons are dried for use in sanding tracks. The remainder of the sand, or 15,712 tons, is used for concrete work in connection with rebuilding and repairing surface tracks and for other purposes.

The dry sand flows by gravity directly into the sand cars used in sanding the track and also into the service cars that transport it to our reserve storage bin located at Camden Street, Roxbury, where we endeavor to keep a reserve supply of approximately 4,400 tons of dry sand.

During the winter months it is not always possible for the sand boats to make regular trips to Plum Island owing to the inclement weather and for this reason a reserve supply of sand at George Street is built up during the summer months. This reserve supply is approximately 3800 tons.

* * *

SUCCESS

"Bear in mind what I say: Take care of your health. Perform your task so well that you satisfy yourself that it is well done. Whatever opportunity occurs to you, take advantage of it and follow it to the finish. If you do that, and exercise ordinary, sound common sense in doing it, you are bound to make a success."—*Samuel Insull.*

SPECIAL INVESTIGATING COMMITTEE

Following close on the heels of the adjournment of the last Legislature, the Recess Committee appointed to study the future Boston Elevated Railway has already started its studies.

Four inspection trips were taken to various points on the system—on May 27, June 1, June 3 and June 5.

The cut shows the majority of the Committee on the State House steps preparatory to starting on the last inspection trip. Those in the picture are:—

Front Row: Senator H. P. Gifford, Rep. C. L. Carr, Senator Chas. C. Warren, Rep. C. S. Liutweiler, Rep. G. L. Richards.

Middle Row: Sen. E. F. Fish; Edward Dana, Gen. Mgr. Boston Elevated Railway; W. D. Howie, Secy. Recess Committee.

Back Row: Rep. Wm. P. Hickey; Rep. H. L. Shattuck; H. Ware Barnum, General Counsel, Boston Elevated Railway.

There were absent Representatives M. Hays and F. X. Coyne.

* * *

The universe is always supplying new material for thought, new aspects are presented that render the formerly observed ones unreal, and as the new impressions suggest new revisions, so as we grow older the meaning of the universe becomes clearer, at least for us, and the mind life becomes more active and productive.

* * *

"He is safe from danger who is on his guard even when safe."

* * *

"My boy," said a father to his son, "treat everybody with politeness, even those who are rude to you; for remember, that you show courtesy to others, not because they are gentlemen, but because you are one."

"WHAT ARE YOU IN BUSINESS FOR ANYWAY?"

Mr. Charles Cheney, whose name is synonymous with silk in America, asked an audience of men in the industry recently, "What are you in business for anyway?" He added:

"I don't believe that there is a man here that would stand up and say that he was in business only for the money he could get out of it. If there is a man here who is in business only for the money he can get out of it, he had better resign and try some other job; there is not enough money in it to pay for his life on that basis. We are in business to answer the question, if we can, of 'What are we here for? What is life anyway?' We are here that through our business we may work out our life problem, and, think of it men!—business is the biggest part of our life. If we are not going to enjoy ourselves in our business, if we are not going to be proud of that part of our life which concerns itself with business, why, life is a pretty hollow thing. So, we are here principally that we may enjoy life, prosper by it and do our duty in life. If that is true, I need make no apology for asking you to take it seriously."

* * *

UTILITY

"If I had my life to live over again and as a youth could be endowed with the knowledge which experience alone gives, I would again go into the public utility business, not alone because of the recompense it has afforded in the past and will in my judgment afford in the future, but because of the great personal satisfaction that comes from being allowed to participate in the solution of the great problems involved in semi-public businesses, so vital to the life and well-being of the community in which one lives and also of the state and of the nation."

COST OF MAKING MONEY

Paper money is so much a thing of daily life that it seems natural to think of it as an almost natural phenomenon, like the leaves of the trees. But paper currency is not produced by the waving of a wand. One of the biggest manufacturing plants in the world produces it by hard labor and the use of intricate machinery.

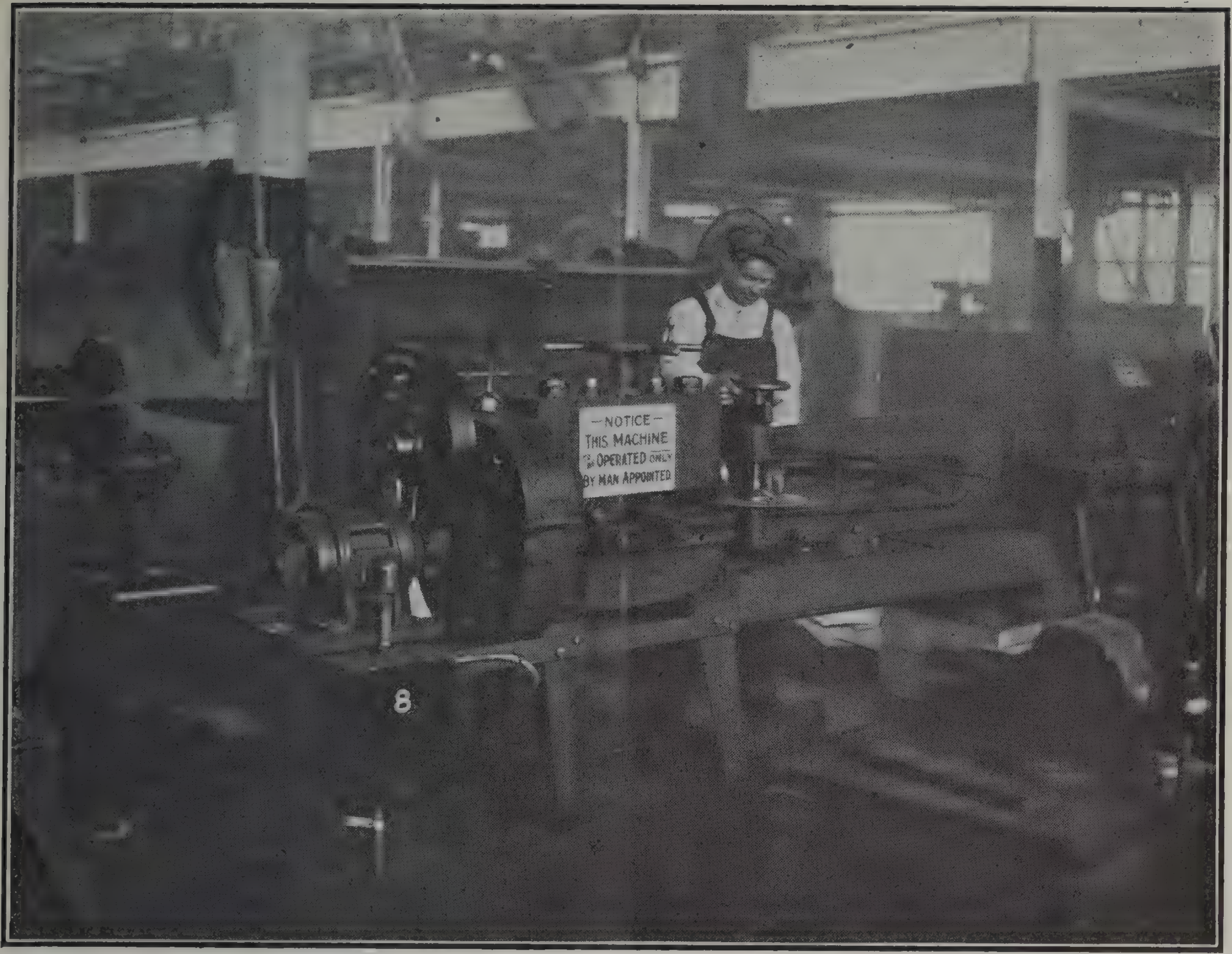
The dollar bill, for instance, costs 1.7c to make. This seems a small figure taken by itself but when it is considered that 48,000,000 of these bills must be put into circulation each month, it will be seen the cost mounts up. Those who complain of dirty money and governmental carelessness are probably unaware that a $1 bill remains in circulation only from six to eight months. With each one costing 1.7c the actual cost of putting dollar bills in the hands of the people is about 3 per cent a year—a figure equal to bank interest.

If the life of the $1 bill could be prolonged only two months, the government would save $1,666,000 annually.—L. A. Times.

* * *

"The only hope of preserving what is best lies in the practice of an immense charity, a wide tolerance, a sincere respect for opinions that are not ours."

"The yearly toll of traffic accidents has reached an appalling total. If the death and disaster that now fall on innocent people were concentrated into one calamity, we would shudder at the tremendous catastrophe. The evil you are combating is of national concern."—*Calvin Coolidge.*



CIRCULAR SHEARS

The above illustration shows a circular shears which is installed in the Everett Shops and is the first of its kind owned by this Railway.

The operator in the picture is shown cutting a circular metal disk about 12 inches in diameter, but the machine is designed to cut circular disks up to 60″ in diameter and ⅛″ thick.

With this machine, a steel disk ⅛″ thick can be cut out in a fraction of a minute, whereas under the old method of cutting with a cold chisel and trueing up with a file, it might take an hour.

There is also an adjustment on the machine whereby the edge of a disk can be flanged down in order that it can be riveted to a circular drum to form tanks, barrels, paint pails and other similar containers.

The machine weighs about 2300 pounds, is run by a 3 H.P. motor and cost more than $1000.

THE LITTLE THINGS ALL COUNT

During the years 1923 and 1924 there was collected 224 tons of waste paper, for which there was received $2,630.54. The paper is collected at carhouses, sent to a central point, baled and sold. As it costs less to dispose of it in this way than to burn it, this evidences a businesslike, economical way to meet a necessary burden.

* * *

It isn't the work that worries you
So much as it is your mind,
The way you approach the thing you do
Expecting a dreary grind.
If you would view it with eyes of cheer,
As a pleasant task undone,
Like the mist in the morn it would disappear,
And you'd smile when it was done.

TREASURY DEPARTMENT

Those who receive the Company's monthly bulletin have had the opportunity to become familiar with the faces of the men who are in charge of the Operating, Maintenance departments, Claim and Accounting departments and the above picture brings before you the men who are responsible for the handling, care and distribution of the funds of the Company.

These men came into the employ of the Company while quite young and have given long and faithful service which is attested by the fact that while their average age is now but a little over fifty-two years, their average term of service with the Company has been over thirty years.

All of our employees will recognize in this group some man whom they regularly and gladly meet each week when pay day comes around.

During the course of a year about $33,400,000.00 passes through the office of the Receiving Cashier of which about $11,000,000.00 is in bills and the balance in coin. About $15,000,000 00 of this sum is received in dimes.

During the year it is necessary to distribute about $8,400,000.00 in change to the ticket offices in the elevated and subway stations.

Paymasters use over $16,000,000 in paying employees.

The departments also receives and distributes over 148,000,000 tickets, transfers and coupons while from the Treasurer's office is sent out over 21,000 bank checks in payment of Company purchases.

The men as they appear in the photograph are as follows:

Front row, Michael McFarland, Assistant Cashier; E. R. Peters, Assistant Receiving Cashier; L. J. Dickey, Receiving Cashier; H. L. Wilson, Treasurer; Irving Pratt, Cashier; N. C. Fielding, Ticket Agent; D. J. Prendergast, Rent Agent; R. L. Leahy, Voucher Clerk.

Rear Row, W. P. Brown, J. F. Henderson, W. H. Sullivan, Charles Symonds, F. I. Howe, A. W. Flanders, Paymasters.

* * *

"Public sentiment is everything. With public sentiment nothing can fail; without it, nothing can succeed. Consequently, he who molds public sentiment goes deeper than he who enacts statutes or pronounces decisions."—*Abraham Lincoln.*

J. Lindall; J. E. Troy; Edward Dana, Ch.; W. D. Doyle, Sec.; R. A. Sears; Jas. Smith.

PENSION COMMITTEE

The cut shows the Pension Committee in session at one of its regular meetings. For the information of employes the following summary of the Pension Plan in effect since February 1, 1920, upon this railway is reprinted.

There are four classes of employes who may be pensioned:

Class A—An employe whose age is 65 years or more (female 60 years or more) and whose term of employment has been twenty years or more.

Class B—An employe whose age is 60 to 64 years (female 55 to 59 years) and whose term of employment has been twenty-five years or more.

Class C—An employe whose age is less than 60 years (female less than 55 years) and whose term of employment has been thirty years or more.

Class D—An employe totally disabled as a result of sickness or injury and who does not come under any of the other classes as to age or years of employment. Each case under Class D is submitted to the Board of Trustees for approval upon recommendation of the Pension Committee.

The amount of annual pension is based upon 1¼% of the average yearly earnings for the ten years previous to retirement multiplied by the number of years of service with the company.

No employe shall receive less than $375 per year and the maximum is $2000 per year.

Pensions are paid on the first of each month for the preceding month in the sum of one-twelfth of the annual pension. At the time the Pension Plan went into effect there were 98 employes drawing gratuity allowances based on no particular plan amounting to $31,428.14 annually. On June 1, 1925, there were 289 employes on the pension list receiving $135,146.06 annually.

The Pension is based upon continuous employment with the company.

Employes leaving the service of the company and later returning are eligible for pension dating from the day of their last employment.

FINAL RECORD OF EDUCATIONAL COURSES

For Season 1924-1925

	Number Enrolled	No. Awarded Certificates	%	No. Awarded Certificates With 100% Attendance	%
Power Dept.	137	112	82	37	33
Maintenance Dept.	218	139	63	25	18
R. S. & S. Dept.	216	112	51	20	18
Transportation Dept.	437	214	49	39	18
Women's Group	78	32	41	6	18
Total	1,086	609	56	127	21

MAY OPERATION

	1925	1924
Revenue exceeded cost of service	$139,081.44	$96,010.44
Ratio operating expense to operating revenue	68.48%	70.47%
Operating revenue per car mile operated	61.53c	60.98c
Operating revenue per car hour (A.E.R.A. Standard)	$5.81	$5.79
Revenue Passengers	31,326,996	33,989,949
Per cent 5c and 6c Passengers	18.16%	27.42%
Average fare per revenue passenger	9.244c	8.628c
Revenue passengers per car mile operated	6.517	6.943
Car Miles Operated		
Rapid Transit Lines	1,280,268	1,302,507
Surface, Two-Man	2,185,259	2,493,395
Surface, One-Man	1,156,809	1,039,251
Motor Bus	175,635	60,437
Express, Newspaper and Sprinkler Cars	8,370	8,611
Total	4,806,341	4,904,201
Trips Operated	619,827	617,309
Employes complained of by car riders	90	120
Complaints in regard to car service	8	7
Average number of witnesses per accident	3.7	3.7
D. C. K. W. output gross for month	18,298,860	19,475,360
Maximum K.W. hour load	62,400	63,560
Tons of coal consumed	16,253	18,444
Lbs. of coal burned per K.W.D.C. at cars	1.995	2.127
Revenue passengers carried per accident	32,700	33,989
Accidents per 10,000 car miles	1.99	2.04
Car defects reported per 10,000 car miles	4.9	6.8
Operating and maintenance cost of power, including depreciation:		
Per K. W. H. for car service	1.10c	1.17c
Per revenue car-mile	4.04c	4.42c

June 30, 1925.

Edward Dana, *General Manager.*

Vol. 4 JULY, 1925 No. 7

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PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

SERVICE
FOR THE
SAFE CAR RIDERS SURE
SATISFACTORY

WHEN DYNAMITE EXPLODES

Big dynamite blasts are more and more frequent items of news. Charges of dynamite are buried deep in the face of a cliff, an electric switch is turned, there is a deafening roar, and thousands of tons of rock come crashing down. What, the inquiring observer asks, produces this explosion? What actually happens when dynamite explodes?

To answer this question it is necessary to explain briefly what dynamite is. Reduced to its essentials, dynamite is a mixture of nitroglycerin with wood meal and nitrate of soda or nitrate of ammonia, or both. Nitroglycerin, in turn, is composed of several different elements, namely: carbon, hydrogen, nitrogen, and oxygen, the molecules of which are grouped in such a way as to form a heavy, oily, yellow liquid. Now these same molecules are capable of arrangement in other groups to form several different substances instead of the one, and the bonds which hold them together in the particular arrangements which makes nitroglycerin are very weak.

Consequently, when the electric current sets off the detonator imbeded in the dynamite, and this imparts a sharp shock and very high temperature to the nitroglycerin, the bonds between the molecules which compose the nitroglycerin break down. The nitrogen and some of the oxygen remain free, both of them, gases, while the other molecules instantly combine to form two compound gases, carbon dioxide and water vapor. The breaking down of the nitroglycerin and rearrangement of its molecules generates a great deal of heat, enough to raise the temperature of the gases to 6300 degrees F. or thereabouts, and this high temperature causes the other ingredients of the dynamite to decompose into gases, or to burn, with the release of still more heat. All of this takes place in a single instant, and the highly heated and rapidly expanding gases, which would normally occupy a much greater volume than the dynamite, exert a sudden tremendous pressure on the walls of the bore hole. The rock gives way and the escaping gases set the air into violent vibration. To the beholder, the explosion consists of the roaring noise and the rending of the rock, but in reality these are only the audible and visible results of the rearrangement of the molecules of the dynamite when subjected to a shock from the detonator, this conversion of the nitroglycerin and other ingredients of the dynamite into gases constituting the actual explosion.—*Charles S. Hurtes in The Excavating Engineer.*

SAFETY FIRST

The Committee on Public Health and Sanitation, Boston Chamber of Commerce, has issued a bulletin containing the following suggestions:

For Your Own Safety, Be Vaccinated Against Smallpox

You should be vaccinated right away, unless you have had it done within the last five years.

Vaccination will prevent your catching smallpox.

In several large cities lately smallpox has appeared. The best way to stop it from coming to Boston is for everyone to be vaccinated.

Vaccination is safe and the best preventive against smallpox known.

You can go to your family physician to have it done, or your employer will tell you where it will be done free.

The only result might be a sore arm, but that is better than smallpox.

COMPARATIVE DIVISION OF RECEIPTS AND EXPENDITURES FOR THE YEARS ENDING JUNE 30

	1925	1924	1923	1922	1921	1920	1919
Total Receipts	$34,198,250.91	$34,262,009.46	$33,612,335.20	$32,698,965.01	$34,200,286.06	$32,671,515.53	$25,226,981.50
Operating Expenses							
Wages	17,108,826.50	17,218,039.47	15,024,348.04	14,920,406.05	16,753,667.74	16,381,206.58	13,554,684.15
Material, supplies and other Items	3,164,261.04	3,165,430.27	3,149,687.89	3,056,520.80	2,899,983.94	3,321,671.70	4,096,537.98
Injuries and Damages	649,131.12	789,098.53	700,740.79	476,844.02	627,629.02	627,626.48	805,353.09
Depreciation	2,496,000.00	2,250,000.00	2,004,000.00	2,004.000.00	2,004.000.00	2.004,000.00	2.004,000.00
Fuel	1,188,199.60	1,587,089.27	2,027,712.50	1,656,012.89	2,399,277.71	1,996,717.21	1,901,596.75
Total Operating Expenses	$24,606.418.26	$25,009,657.54	$22,906,489.22	$22.113,783.76	$24,684,558.41	$24,331,221.97	$22,362,171.97
Taxes	1,623,666.39	1,603,269.38	1,722,707.95	1,610,096.47	1,306,736.39	1,075,496.70	941,611.50
Rent of Leased Roads	3,173,836.74	3,182,020.41	3,186,048.02	4,155,997.46	4,196.533.56	4,011,535.96	3,947,349.57
Subway and Tunnel Rents	2,189,966.39	2,060,337.09	2,025,263.33	1,974,141.07	1,947.963.20	1,591,323.98	1.491,999.54
Int. on B. E. Bonds and Notes	2,576,651.75	2,479,762.27	2,277,051.15	1,483,786.91	1,483,625.54	1,593.257.58	1,423,142.14
Miscellaneous Items	58,995.48	71,165.21	65,986.23	58,475.99	54,479.21	69,284.73	37,372.67
Total Cost of Service	$34,229,535.01	$34,406,211.90	$32,183,545.90	$31,396,281.66	$33,673,896.31	$32,672,120.92	$30,203,647.39
Loss or Gain not including Profit and Loss Items	*$31,284.10*	*$144,202.44*	$1,428,789.30	$1,302,683.35	$526,389.75	*$605.39*	*$4,976.665.89*
Profit & *Loss* Delayed Items	51,865.43	144,202.44	*314,231.48*	82,528.09	23,863.77	17,685.34	*3,485.78*
Total *Loss* or Gain including Profit and Loss Items	$20,581.33	$00.00	$1,114,557.82	$1,385,211.44	$550,253.52	$17,079.95	*$4,980,151.67*
Back Pay applying to May & June, 1919, but paid in October, 1919	....	....	....	....	....	....	*$435.348.46*
Total *Loss*	....	....	....	....	....	....	*$5,415,500.13*

	1918	1917	1916	1915	1910	Sept. 30, 1905	Sept. 30, 1900
Total Receipts	$19,480,022.08	$19,788,953.25	$18,781,327.74	$17,886,549.64	$15,245,865.48	$12,741,569.30	$10,236,994.49
Operating Expenses						....	....
Wages	9,147,757.25	9,033,868.40	8,351,117.54	7,709,373.86	5,910,757.73	....	....
Mat,. Sup. & Other Items	2,680,423.77	1,951,176.39	1,921,083.01	1,922,622.52	2,376,033.78	....	....
Injuries and Damages	817,227.18	819,705.54	762,351.77	722,177.00	776,588.37	....	....
Depreciation	352,670.00	330,000.00	220,000.00	62,989.65	200,000.00	....	....
Fuel	1,381,957.20	947,412.50	825,443.64	870,820.30	822,497.54	....	....
Total Operating Expenses	$14,380,035.40	$13,082,162.83	$12,079,995.96	$11,287,983.33	$10,085,877.42	$8,617,653.04	$7,068,110.24*
Taxes	905,032.96	984,070.55	1,043,041.89	1,069,189.27	1,213,089.37	1,047.333.72	825,993.04
Rent of Leased Roads	2,905,611.60	3,622,482.28	3,589,774.21	3,638,655.75	3,030,168.15	1,233,199.43	1,157,130.09
Subway and Tunnel Rents	991,551.30	995,093.45	915,192.35	825,496.17	559,469.14	228,540.63	211,146.67
Int. on B. E. Bonds & Notes	1,238,373.55	1,138,655.88	1,129,677.70	1,049,785.12	556,000.00	779,757.76	498,569.89
Miscellaneous Items	16,050.44	9,525.11	13,845.90	4,587.89			
Total Cost of Service	$20,436,655.25	$19,831,990.10	$18,771.528.01	$17,875,697.53	$15,444,604.08	$11.906,484.58	$9,760,949.84
Loss or Gain	*$956,633.17*	*$43,036.85*	$9,799.73	$10,852.11	*$198,738.60*	$835,084.72	$476.044.65

*Includes $240,000.00 to Depreciation Reserve.

The Sprague (West End) Electric Road, Boston.

For some time past electrical engineers interested in street railway matters have been awaiting a report on the preliminary trials of the new Sprague road put in between Boston and the suburb of Brookline, a distance of several miles. We are enabled this week, through the courtesy of the Sprague Company, to present some details and illustrations.

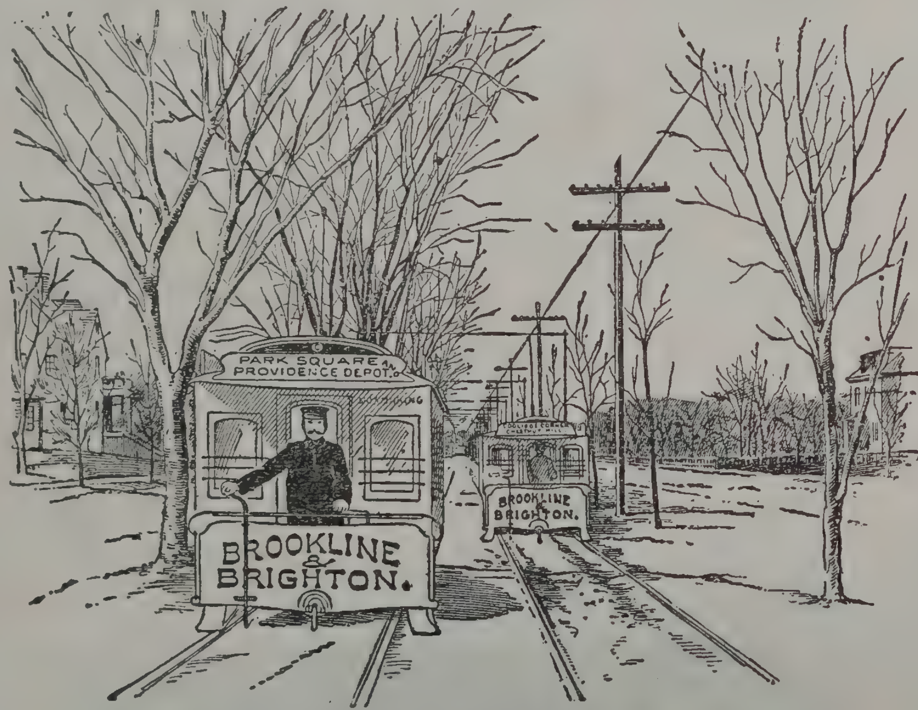

PARK SQUARE & PROVIDENCE DEPOT
BROOKLINE & BRIGHTON.
BROOKLINE BRIGHTON.

FIG. 1.—VIEW ON BEACON STREET, BOSTON.

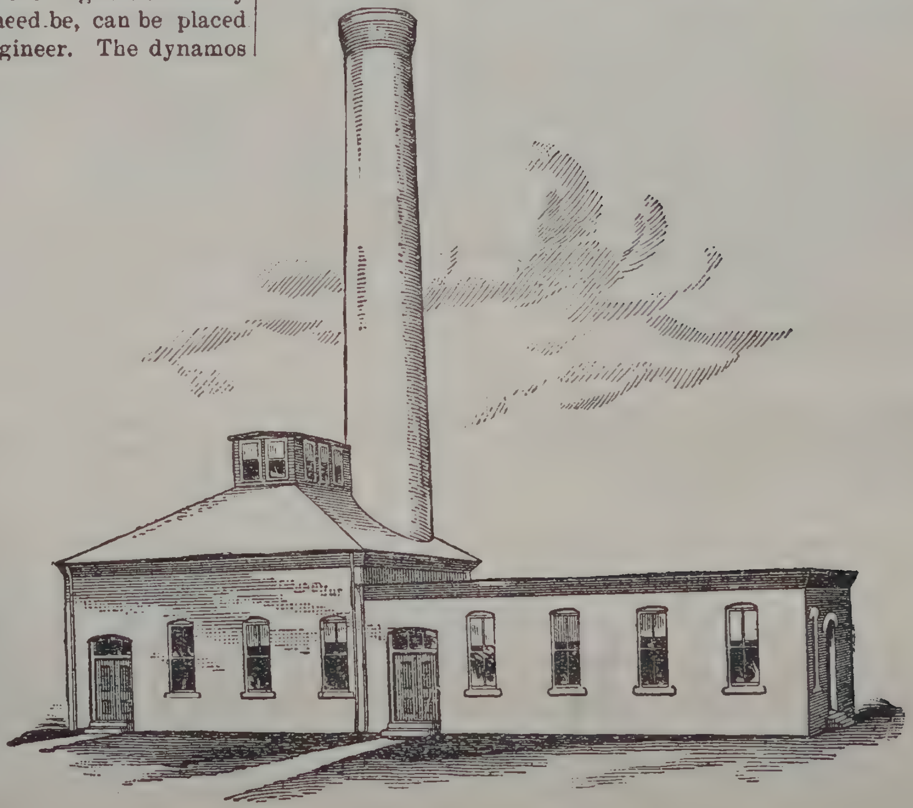


FIG. 2.—SPRAGUE POWER HOUSE AT ALLSTON

The West End Street Railway, of Boston, of which the road is a part, is the largest street railway in the world; it extends over 212 miles of track, using 1,700 cars and more than 9,000 horses. The president of the West End Street Railway Company, Mr. Henry M. Whitney, of Boston, is universally recognized as one of the most enterprising and successful street railway men in the country, and, aided by an efficient corps of assistants, he has succeeded in giving Boston the most efficient street railway service that ever existed there. Before deciding upon the electric system to be adopted upon the West End road or awarding

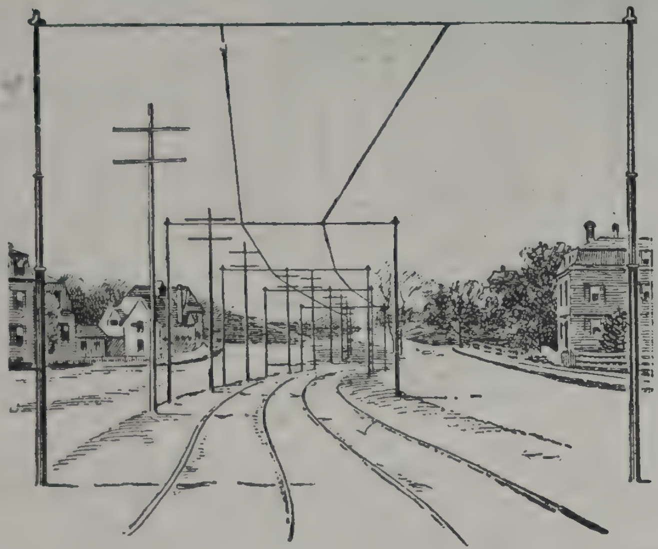
boiler-house, which is both convenient and commodious, is at present equipped with three horizontal tubular boilers, furnished by the Jarvis Engineering Company. The engine room contains two high-speed automatic cut-off engines of the Armington & Sims pattern, of 200 h. p. each. Each drives two powerful Edison dynamos of 80,000 watts each, and wound for a maximum pressure of 500 volts. These dynamos are of the highest efficiency and simplest construction, and, if need be, can be placed under the charge of the steam engineer. The dynamos feed into copper bus wires, supported on the walls by porcelain insulators.

Each machine has its independent ampèremeter, and in addition there is a general ampèremeter at the end of the positive bus bar. From this bar the current passes to special snap switches; each switch being connected through a three-plug safety switch back to one of the feeders supplying current to the main line wire. These feeder wires tap into the line wire at different points on the line of road, thus maintaining the pressure approxi-

made of silicon bronze of the small Sprague type, only $\frac{3}{16}$ of an inch in diameter. This is the only wire suspended over the middle of the track, and its lightness and high tensile strength allow the overhead supporting structure to be of the lightest description possible. The poles are 125 feet apart.

The return circuit is through the rail, and thence by both metallic and ground circuits to the station. Each section of rail is joined to copper ground wires throughout the length of the road underneath the string pieces. At intervals of 500 feet this ground wire is connected to an earth plate, and at seven points widely distributed the ground wire is connected to the station, and there is also a main ground connection made there through a large earth-plate. In the overhead system a new method of switching has been adopted which is at once ingenious and simple. Five or six feet inside the turnouts a small the principal electric railways in the country, and made trips upon three different occasions to Richmond, Va., to inspect the road in operation there upon the Sprague system.

The system of electric railway called for in this contract is wide and comprehensive. The main line from Boston westward, beginning at Park Square, will run down Boylston street bridge, and then down Chester Park to Beacon street. It will then proceed over the Beacon street extension, Figs. 1 and 3, to the Chestnut Hill reservoir, and to Allston and Oak Square, Brighton. From the East Park gate over the new boulevard to the Chestnut Hill reservoir and Brighton the Sprague overhead system will be adopted. In the more crowded streets of the city the Bentley-Knight conduit will be used, and the Sprague cars will run over the whole system.



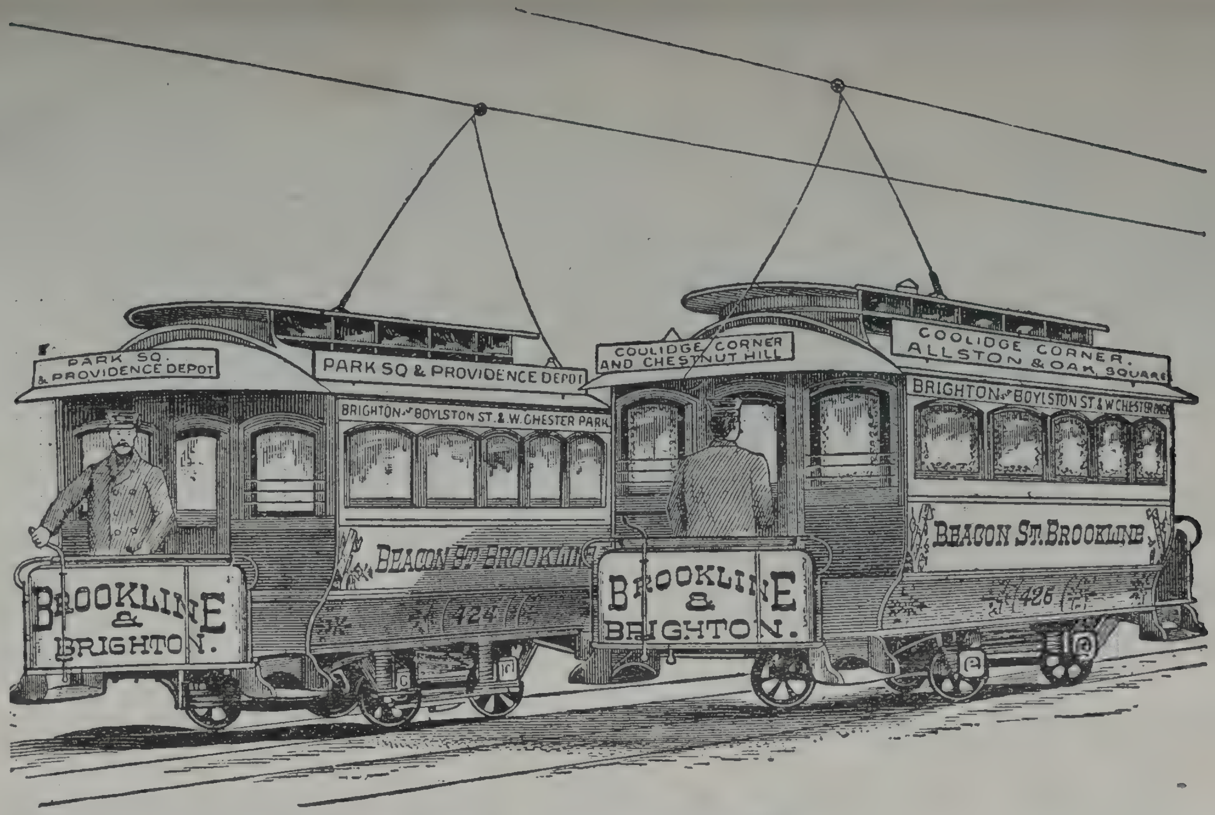

PARK SQ. & PROVIDENCE DEPOT
PARK SQ & PROVIDENCE DEPOT
BRIGHTON VIA BOYLSTON ST. & W. CHESTER PARK
BEACON ST. BROOKLINE
424
BROOKLINE & BRIGHTON.
COOLIDGE CORNER AND CHESTNUT HILL
COOLIDGE CORNER. ALLSTON & OAK SQUARE
BRIGHTON VIA BOYLSTON ST & W. CHESTER PARK
BEACON ST. BROOKLINE
426
BROOKLINE & BRIGHTON.

FIG 3 AND 4.—VIEWS OF SPRAGUE ELECTRIC RAILWAY, WEST END, BOSTON.

The power station, Fig. 2, from which the electric current is distributed to the line, is situated on Braintree street, Allston, near the Boston & Albany Railroad, and also at the edge of the water, thus giving both water and rail facilities for fuel. This plant, which is one of the best of its kind in the country, is situated very nearly equidistant from the extremities, and is, therefore, literally a central station. The station, with the adjoining car-house, is of brick and completely fire-proof. In its construction it was the aim of the West End Company to get the best in every detail. The chimney stack is 100 feet high. The ers in the central station, pressure indicators are attached, which indicate the voltage at the junctions of the feeders with the main current wire.

The engine-room is brilliantly lighted by handsome hanging electroliers, each of which have five incandescent lamps. A switch-board at one end of the room furnishes an independent control for each group of lamps. All the surroundings of the machines are kept in the neatest condition. Adjoining the power house, but separated by thick brick walls, is a commodious house for accommodation of cars, 107 feet long by 80 feet deep, designed to hold 24 cars.

The fine overhead system, see Figs. 3 and 4, includes iron poles set in concrete throughout the entire length of the road. These poles are of a very neat and tasteful pattern, and support the span wires which carry the trolley wire at a height of eighteen feet over the centre of the track. This overhead wire, which is used for a working conductor, is branch wires, and a spring tongue upon this directs the path of the "trolley" with absolute certainty and ease. By this means switching is made very easy, and all danger of the trolley leaving the wire is obviated.

The cars, Fig. 4, can be run at widely different speeds, varying from the slowest crawl to 12 or more miles per hour. They can be started and stopped without the use of brakes in the space of 3 or 4 inches, and when making the normal running speed can, in an emergency, be stopped and reversed without brakes within less than one-quarter of a car length. This is especially advantageous in crowded thoroughfares, and shows the superiority of the electrical car over the horse or cable cars. The control over the car seems marvelous, for one notes little or nothing save a slight movement of the hand of the motor-man; and the starting, although prompt, is very gradual and without shock or jar. The ordinary driver can operate one of these cars without the slightest trouble, after a very

A NOVEL GATE

With the installation of third rail train operation in East Boston Tunnel, it became necessary to provide means to transfer the new rapid transit cars from the tunnel to and from the repair shops at Eliot Square, Cambridge.

Investigation showed that it was possible to install crossovers to connect the surface lines tracks with the Cambridge subway tracks at a point near the Cambridge side of Cambridge bridge. The tracks of the rapid transit system occupy the center of the bridge and are flanked on either side by the surface car tracks. Fences separate the tracks of the two systems. A section 68 ft. 8ins. long had to be removed from each fence to pass cars over the crossovers, and rolling gates installed, to block the openings when not in use.

The design of the gates presented several interesting problems, for the openings in the Crossovers had to be crossed smoothly and the driving mechanism had to be of a self-locking design, as the gate runs upon a 3 per cent. grade. Sections of the fences at locations where the gates paralleled them, when open, were moved out toward the surface lines tracks, a distance of 12⅝ ins., which was the maximum allowable distance, and which left a space of approximately six inches between posts for the operating chain to run in.

Each gate weighs approximately 4½ tons and is operated by a 7½ horse power crane hoist type motor which moves them at a speed of about 105 feet per minute. The 9 trucks which carry each gate are electric steel castings with 4 cast iron flangeless wheels with hardened ground steel axles which run on ball bearings. Two 5-inch H-beams with rivited guard irons form the tracks.

HOW TO FORGET

If you were busy being kind,
Before you knew it you would find
You'd soon forget to think 'twas true
That someone was unkind to you.

If you were busy being glad,
And cheering people who were sad,
Although your heart might ache a bit,
You'd soon forget to notice it.

If you were busy being true
To what you know you ought to do,
You'd be so busy you'd forget
The blunders of the folks you've met.

If you were busy being right,
You'd find yourself too busy quite
To criticize your neighbor long,
Because he's busy being wrong.

—*Rebecca Foresman in Crane-ing.*

NATIONAL WEALTH OF THE UNITED STATES

(As Estimated by the Bureau of the Census)

	1922
Total	$320,803,862,000
Form of Wealth	
Real property and improvements taxed	155,908,625,000
Clothing, personal adornment, furniture, horse-drawn vehicles and kindred property	39,816,001,000
Manufactured products	28,422,848,000
Real property and improvements exempt	20,505,819,000
Railroads and their equipment	19,950,800,000
Manufacturing machinery, tools and implements	15,783,260,000
Livestock	5,807,104,000
Agricultural products	5,465,796,000
Street railways	4,877,636,000
Motor vehicles	4,567,407,000
Gold and silver coin and bullion	4,278,155,000
Privately owned central electric light and power stations	4,229,357,000
Shipping and canals	2,951,484,000
Farm implements and machinery	2,604,638,000
Telephone systems	1,745,774,000
Imported merchandise	1,548,666,000
Mining products	730,296,000
Pullman and other cars not owned by railroads	545,415,000
Pipe lines	500,000,000
Privately owned water-works	360,885,000
Telegraph systems	203,896,000

PASSENGERS CARRIED ONE MILE

The report of the Boston & Maine Railroad for last year showed 772,430,442 passengers carried one mile.

On a comparable basis the Boston Elevated Railway carried last year 1,438,696,096 revenue passengers one mile.

BUCKET LOADER

The cover design of this issue shows a machine recently purchased for use in the Maintenance Department.

This machine consists of a series of 25 buckets of approximately ½ cubic foot capacity each, on a boom which can be adjusted to the height of the vehicle to be loaded. This bucket boom is mounted on a 30 H. P. gasoline driven tractor on caterpillar treads, with a traveling speed of 8 miles per hour. On account of the slow traveling speed of the loader and to save time, wear and tear, the loader is transported on a ramp car to and from the various jobs.

The material to be loaded is carried to the buckets by two revolving discs, 36 inches in diameter, parellel and close to the ground, then carried to the top of the boom, and dropped through a chute which can be swung into position to load into service cars or motor dump trucks.

Under ordinary conditions these buckets make nine revolutions per minute, loading approximately 4 cubic yards per minute.

This machine may be used for loading sand, crushed stone, coal or ashes, but chiefly for excavated material on track construction jobs, and is operated by one man. During the Winter the machine is converted into a snow loader by substituting a conveyer belt for the buckets, thus making it available for use the year around.

INTERNATIONAL TEMPERATURE CONTEST

September, 1922, at Azizia, Tripoli—shade temperature 136.4° Fahr.

July, 1923, at Death Valley, California — shade temperature, 134.1° Fahr.

One race when first prize is not welcome.

Good will of the public is essential to the success of a public service corporation. Cultivate it. —*Machinist's Monthly Journal.*

There are just two things to keep in mind regarding public relations. First, give the public a square deal. Second, see that the public knows it is receiving a square deal. All the rest is a detail.—*A. G. A. Bulletin.*

THE OFFICE FORCE PLAYS AN IMPORTANT PART IN THE COMPANY'S WORK

Success in the company's offices requires:

ABILITY, ENERGY and a CONSTANT PURPOSE to master the details of the work and to carry out the wishes of the Management.

DEPENDABILITY—Many persons hold excellent positions for the reason that they can be relied upon to accomplish results; such a person is often more valuable to the company than one more brilliant and clever, but not dependable.

LOYALTY—This means having the welfare of the organization at heart and working for its interests all the time. The loyal employe is not working solely for the wage but also because he realizes that he is filling his niche in the great industrial world.

COURTESY—A dignified, courteous bearing is sure to win respect. Be sincere and show good feeling for others.

TACT—No great success is possible without tact. It means true consideration for others and is one of the most important business assets.

Remember that team work by all employes of the force is necessary for efficient work and that cooperation not only prevents but remedies troubles.

RESERVE FUND

July 1, 1923 $1,000,000

July	1923	**deficit**	$285,004.74
August	"	"	319,516.56
Sept.	"	"	251,688.05
Oct.	"	surplus	15,830.84
Nov.	"	"	83,410.50
Dec.	"	"	374,464.85
Jan.	1924	"	125,758.50
Feb.	"	"	19,247.66
March	"	"	75,777.79
April	"	"	16,404.23
May	"	"	96,010.44
June	"	**deficit**	94,897.90
Profit and **Loss**			$144,202.44

July 1, 1924 $1,000,000

July	1924	**deficit**	$353,245.79
August	"	"	445,820.47
Sept.	"	"	207,334.30
Oct.	"	"	36,155.55
Nov	"	surplus	15,031.47
Dec.	"	"	152,527.52
Jan.	1925	"	269,649.08
Feb.	"	"	118,183.05
March	"	"	211,955.71
April	"	"	130,636.68
May	"	"	139,081.44
June	"	**deficit**	25,792.94
Profit and **Loss**			$51,865.43

JUNE OPERATION

	1925	1924
Cost of service exceeded revenue	$25,792.94	$94,897.90
Ratio operating expense to operating revenue	72.40%	73.69%
Operating revenue per car mile operated	60.29c	57.72c
Operating revenue per car hour (A. E. R. A. Standard)	$5.52	$5.45
Revenue passengers	29,247,229	30,454.772
Per cent. 5c and 6c passengers	17.33%	27.07%
Average fare per revenue passenger	9.279c	8.645c
Revenue passengers per car mile operated	6.375	6.559
Car Miles Operated		
Rapid Transit Lines	1,221,409	1,241,697
Surface, Two-Man	2,049,561	2,326,306
Surface, One-Man	1,103,719	1,008,521
Motor Bus	203,947	58,086
Express, Newspaper and Sprinkler Cars	8,558	8,673
Total	4,587,194	4,643,283
Trips operated	598,544	585,859
Employes complained of by car riders	109	125
Complaints in regard to car service	9	1
Average number of witnesses per accident	3.5	4.0
D. C. K. W. output gross for month	16,976,245	17,950,075
Maximum K. W. hour load	60,050	62,080
Tons of coal consumed	14,578	15,710
Lbs. of coal burned per K. W. D. C. at cars	1.929	1.966
Revenue passengers carried per accident	29,159	33,989
Accidents per 10,000 car miles	2.18	1.93
Car defects reported per 10,000 car miles	4.9	6.1
Operating and maintenance cost of power, including depreciation:		
Per K. W. H. for car service	1.16c	1.21c
Per revenue car-mile	4.16c	4.44c

July 30, 1925.

EDWARD DANA, *General Manager.*

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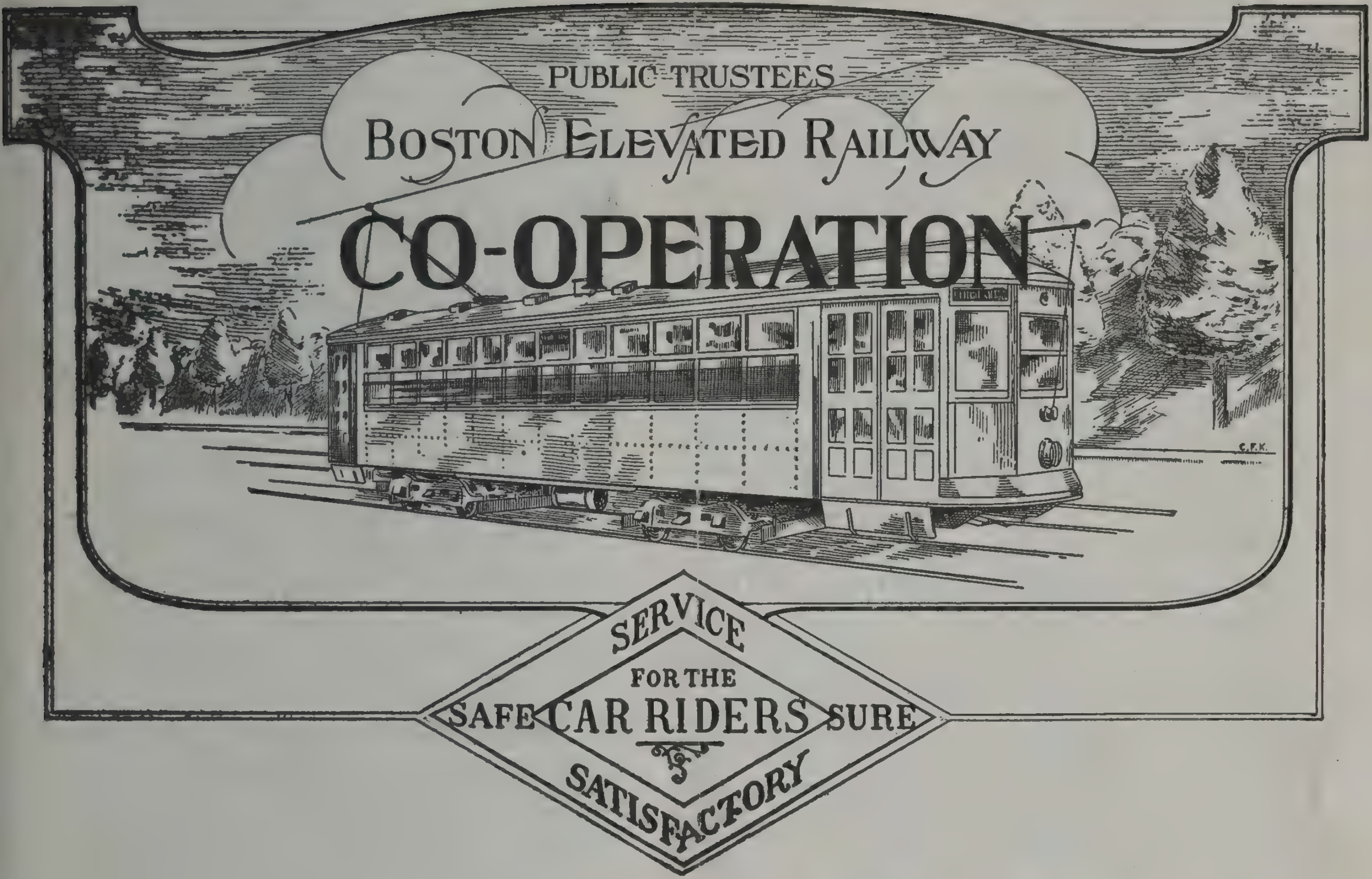
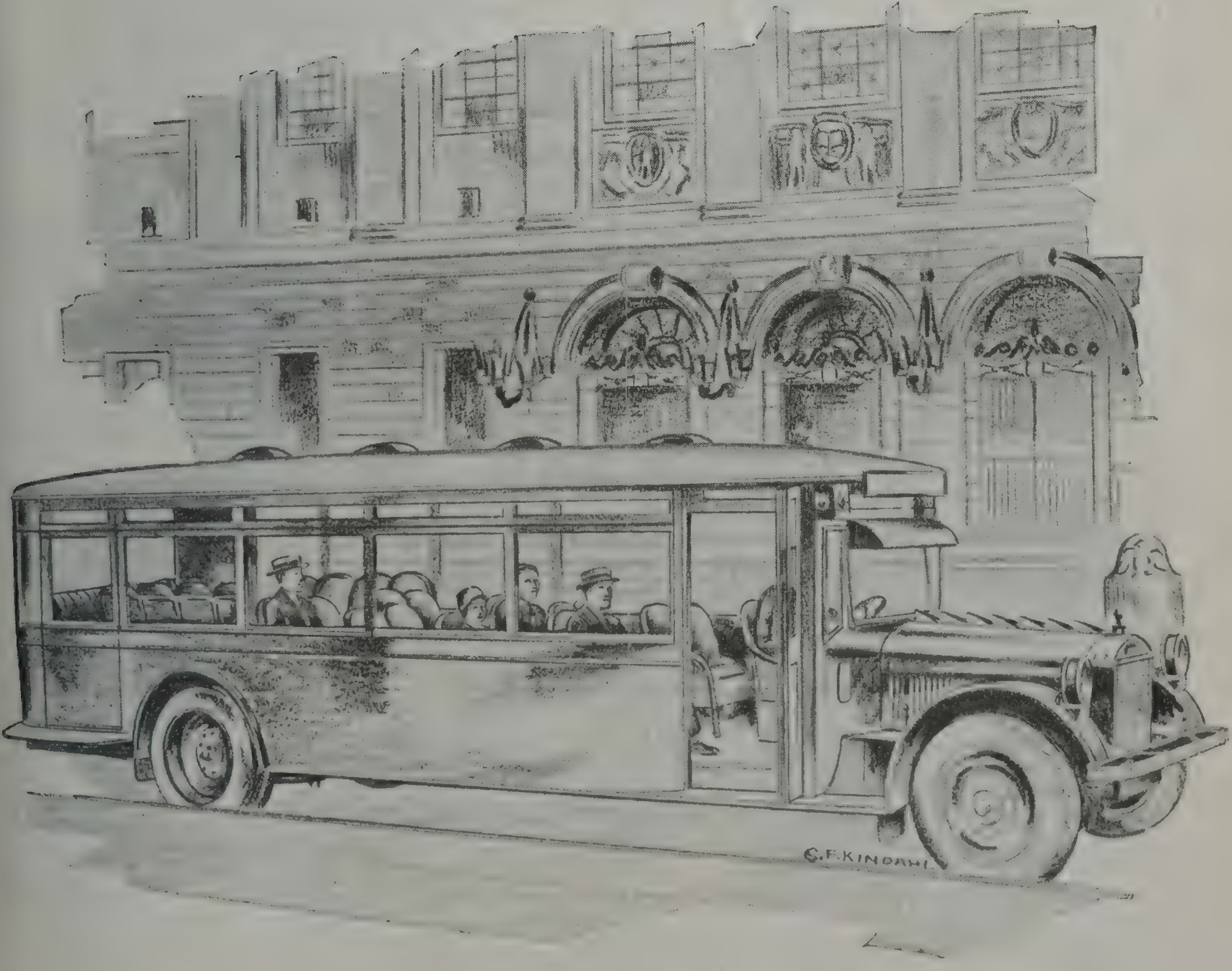
Vol. 4 AUGUST, 1925 No. 8

PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

CO-OPERATION





THIS MONTH'S FRONTISPIECE

The de luxe model bus, pictured on the first page of this issue, has just been purchased for special chartered service, such as long trips and theatre parties. An extra charge of $5 is made for its use. It seats 29 passengers on extra comfortable "air" cushions, and is easy to board and alight from. Two safety doors are provided at the rear. The lighting is excellent, with eight dome lights of 21 candle power each, four on a side. The windows are large, 42 by 26 inches, plate glass, with anti-rattlers. Tires are 36 by 6 inches, single in front, dual at rear. The bus is low, but there is good standing room. The motive power is a 60-horsepower, 6-cylinder engine.

The special service for which this bus was purchased was inaugurated last April. Its popularity has already provided greater business than the available equipment can handle.

For two months a special bus was operated daily to take children from the city playgrounds to a clinic at the Forsyth Dental School, under orders from the Boston School Committee. A regular schedule was operated. Seventy children were carried per day, or about 1,500 altogether, without an accident of any kind.

The accompanying table gives details of the chartered bus service.

This Veteran Died Recently.

MOTOR DISPLACES HORSE ON THE "EL"

The recent death of old Jerry, pictured above, suggests the passing of the horse as motive power in construction and maintenance work on this property. Jerry was officially "Gray Horse, No. 11,441." He was purchased in 1909, when five years old, and worked from the Norway Yard and the General Yard until 1923, when he was transferred to the Lenox street stable. He was used in a tool wagon in the road department until 1924 and later on lighter work until he had to be retired. He was then well cared for at the stable under the direction of Foreman J. J. Cushing.

In 1920 we had 187 horses in service; today there are only 55 horses left, five of them to be retired in a short time.

SPECIAL-BUS SERVICE, BOSTON ELEVATED RAILWAY

April 9 to August 31, 1925, Inclusive

Months	Number of orders	Number of buses	Miles Operated	Total revenue	Aver. revenue per bus	Revenue per mile Cents
April	10	22	601	$596.00	$27.00	91
May	31	53	1,251	979.50	18.30	79
June	58	100	3,401	2,694.30	26.94	79
July	98	159	5,689	4,090.76	25.73	72
August	67	108	4,615	3,307.51	30.63	72
Totals	264	442	15,557	$11,668.07	26.38	75

Longest Trip, to Laconia, N. H. Round trip 220 miles.
Largest order, to Framingham, 28 buses.

EIGHT ACRES OF PRINTS

On the roof of the Park Square Building the Boston Elevated Railway has one of the finest and most up-to-date plants in New England for printing the copies of plans, specifications, timetables, etc., required by its numerous departments.

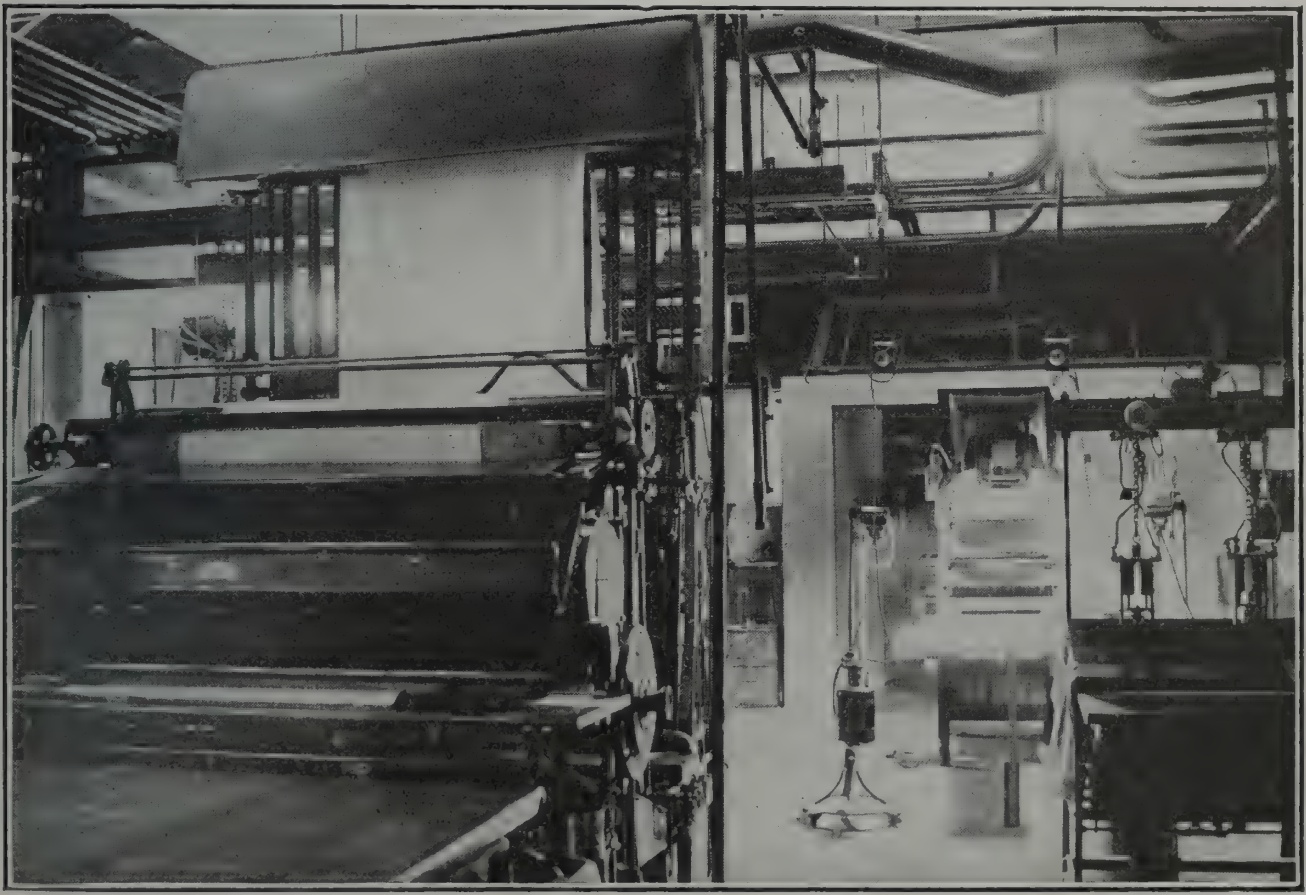
In 1924 a machine capable of taking both blue and white prints was purchased. This machine not only makes the prints but also develops, washes and dries them in one operation. It has a capacity of 4½ feet per minute of paper 54 inches or less in width. Prior to the purchase of this machine the railway used a smaller machine capable of printing only, the washing and drying of the prints being done in another part of the room. Both machines are retained, the smaller machine being kept in workable condition so that in case of failure of the large machine work will not be delayed.

In this same room the railway also has a "rectigraph machine," which will take prints from the original copy of either the same size or it can be enlarged or reduced as may be desired.

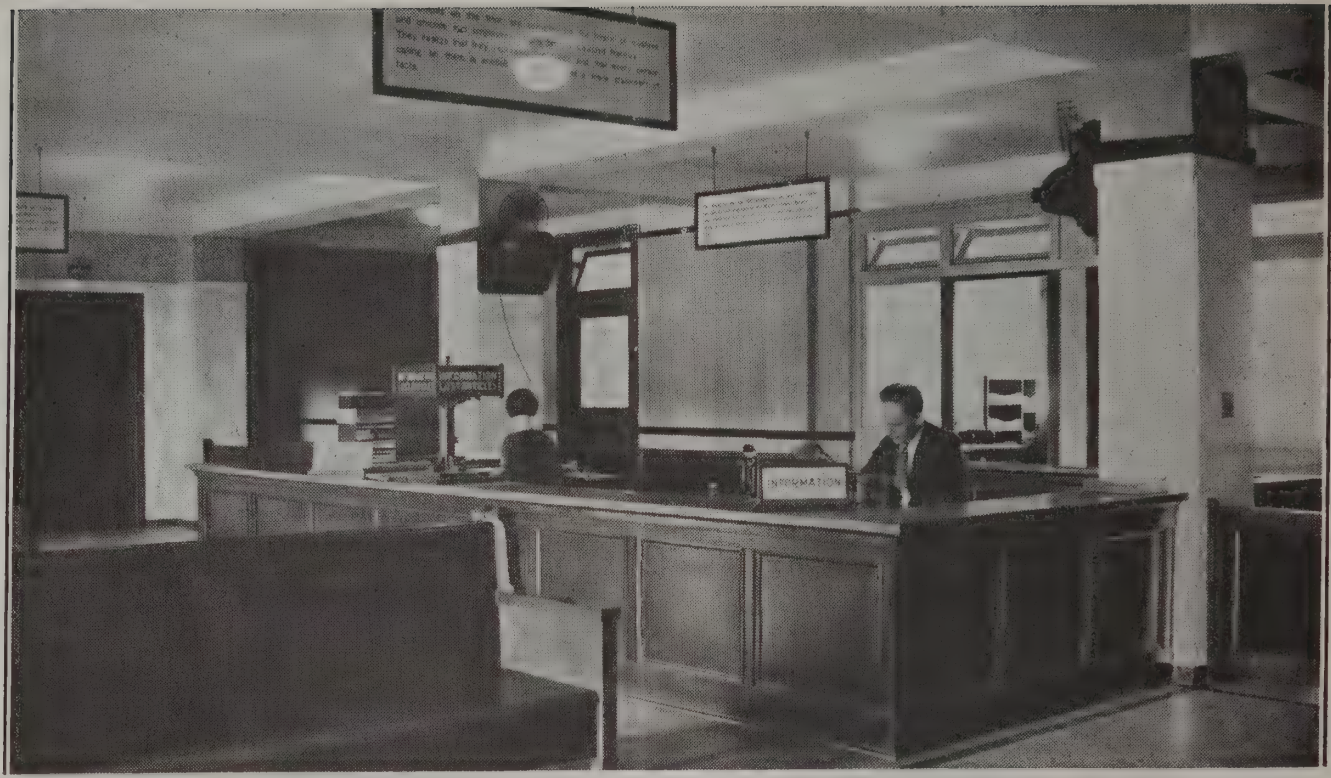
There is also a dark room with facilities for developing and printing negatives which are taken of the progress of construction work, accidents, etc.

During the year 1924 the railway used 150,000 sq. ft. of blueprint paper, 52,500 sq. ft. of rectigraph paper, 157,000 sq. ft. of white print paper and 2,435 sq. ft. of photographic paper, a total of 8.3 acres of paper. The entire cost, including labor and all materials for printing this enormous amount, was $13,380. Had this work been done by commercial printing firms it is estimated that it would have cost the railway $33,900, or about 2½ times as much as we were able to do it for.

The philosophy of life is the philosophy of education, and our interest in education is the measure of our interest in the world and humanity.—*Selected.*



It Prints, Develops, Washes and Dries in One Operation.



An Important Point of Contact with the Public.

AN AID TO THE PUBLIC

The cut shows the lobby at the general offices at 31 St. James Avenue. Mr. E. A. Barlow and Miss M. T. Furniss were on duty at the time the picture was taken.

The sign suspended from the ceiling reads as follows:

> "The offices on this floor are occupied by the board of trustees and officials and employes of the Boston Elevated Railway.
>
> "They realize that they represent the public and that every person calling on them is entitled to courtesy and a frank statement of facts."

Mr. Barlow's duty is to answer inquiries and direct visitors as to their needs. He is alert to serve and employes as well as patrons will find him on the job early and late. Miss Furniss is the expert on lost-and-found articles. She receives reports as to articles found and stored at different points on the system and is, therefore, ready to answer inquiries and to return found articles to their owners.

About 40,000 articles are reported found on the system in the course of a year and of this number about 30,000 are returned to the rightful owners, the remaining articles being returned to the persons finding them.

ACCIDENT COSTS DECREASING

Year Ending June 30.	Injuries and damages acct.	Per cent. of gross revenue	Cost per revenue passenger	Cost per car mile
1917	$931,078.80	4.70	0.2452c	1.55c
1918	927,373.02	4.76	0.2463	1.66
1919	926,515.47	3.67	0.2796	1.73
1920	764,990.89	2.34	0.2360	1.47
1921	776,407.49	2.27	0.2302	1.52
1922	620,207.73	1.89	0.1780	1.25
1923	840,948.88	2.50	0.2250	1.61
1924	957,998.17	2.79	0.2480	1.71
1925	826,277.81	2.41	0.2229	1.48

The above table shows clearly the magnitude of the item in expenses of cost of injuries and damages. This year shows an encouraging reduction over 1924.

CAUTION—SCHOOL CHILDREN AHEAD!

With the opening of the schools we are again confronted with the duty of using extreme caution to protect the children. Many of them have been out of the city during vacation time and have forgotten the dangers of the crowded city streets. Each one of us should continually be on the alert to do something to educate the children to the many dangers that exist and to do our part to overcome them. The horror of accidents to the little ones should need no magnification.

1924-25 EDUCATIONAL COMMITTEE RETIRES

The group below, photographed in the general manager's office, comprises those who were responsible for the educational program of the past season. From left to right the picture shows John Lindall, superintendent of rolling-stock and shops; J. B. Flaherty, maintenance department; Miss Emma E. Mullen, publicity department; Edward Dana, general manager; J. A. Howard, chief clerk power department; Henry H. Norris, New York, educational advisor; E. A. Kelley, assistant to superintendent of transportation. In order to give as many persons as possible actual experience in handling the educational activities of the railway, the departmental representatives will be succeeded by others this fall. The new committee make-up is explained in the following article.

EDUCATIONAL PLANS FOR THE COMING SEASON

The courses of instruction for employes in all branches of the service will this year be under the charge of a committee, with representation from all co-operating departments. Up to date the following appointments have been made: Transportation, E. R. Kelly; Purchasing, F. W. Carroll; Shops, R. B. Smyth; Inspection, F. I. Wilkins; Maintenance, A. S. Hall; Power, J. P. Boyden; Accounting, T. A. Dunbar; Treasury, L. J. Dickey; General Counsel, C. B. Gleason.

A bulletin will be sent out shortly, announcing the courses which will be given provided there is sufficient registration. A provisional registration form will be enclosed with each copy.

Last Year's Educational Committee.

OUR ROAD RANKS FIFTH AS POWER CONSUMER

Indicative of the magnitude of the operations of our Company, is its standing in the ranks of the electric railways of the United States in the matter of electrical energy consumption.

According to 1924 figures, appearing in the Electrical World, the Boston Elevated Railway ranks fifth among the electric railway power consumers of the country, being outranked only by the Interborough Rapid Transit Co., Chicago Surface Lines, Williamsburgh Power Plant Corp., and Philadelphia Rapid Transit Co.

During 1924 our load demands required the production of 261,091,060 K.W. Hours of electrical energy.

It is interesting to note that but eleven railways of the entire number in the United States, including street railways, interurban systems and steam-road electrifications, were listed as consumers of more than one hundred million kilowatt-hours per year.

METROPOLITAN MUTUAL AID OVER 43 YEARS OLD

One of the organizations on the Boston Elevated Railway which dates back to horse-car days is the Metropolitan Mutual Aid Association. Its name comes from the fact that it was organized by employes of the Metropolitan Railroad. The association was incorporated under the laws of the Commonwealth of Massachusetts in September, 1882, for the purpose of aiding members and their families in cases of sickness, injury, inability to labor, on account of other causes, and death.

During its forty-three years the association has carried on its functions with entire satisfaction to all concerned. More than $1,500,000 has been paid to beneficiaries, 14,989 cases of disability having been provided for and 1,050 death claims paid. At present $145,000 is on hand to insure prompt payment of claims.

Several years ago the railway management volunteered an annual contribution of $3,300 for running expenses, and provided adequate quarters, with light and heat, for the weekly meetings. Thus all money paid into the treasury goes to pay claims upon the association.

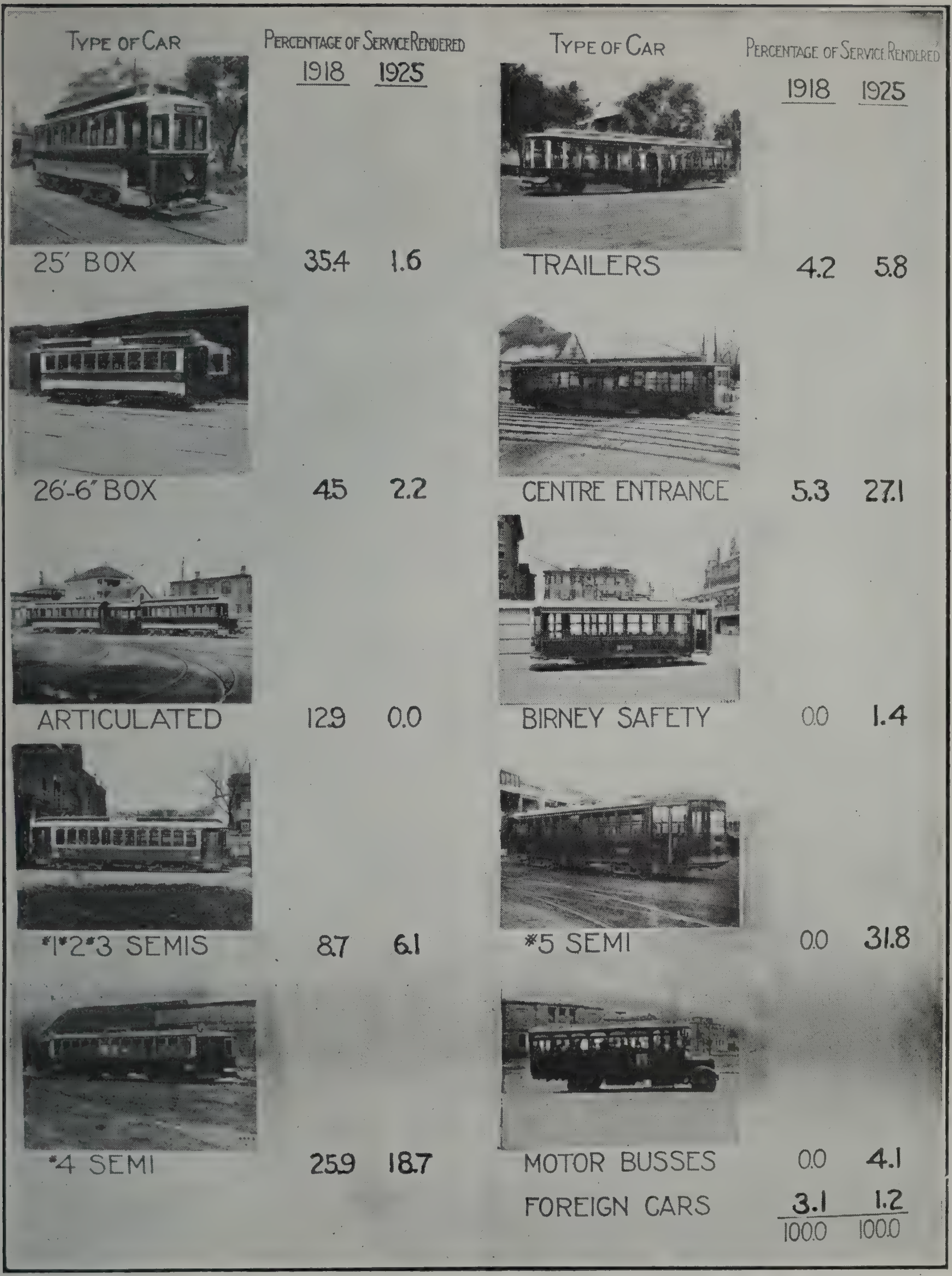
Any male employe of the railway between 18 and 41 years of age is eligible for membership. He pays $24 per year, one-quarter of which is for sickness claims and the remainder for life insurance. This amounts to 6½ cents per day. The rate is considered by insurance experts to be remarkably low, considering that the benefits for ten weeks in any twelve consecutive months are $7 per week, and the life insurance amounts to $1,000.

ROLLING STOCK CHANGES IN SEVEN YEARS

The chart on the next page shows in easily remembered form the facts regarding the rolling-stock situation on this property at the end of the seventh trustee year.

The percentages of service rendered by various types of cars in 1925 as compared with 1918 is even more startling than those shown by the comparison shown in "Co-operation" at the end of the sixth trustee year.

Of interest to note is the fact that about 37.3 per cent. of the service is now operated by types of equipment not on the property in 1918, namely, the Birney safety car, the No. 5 semi-convertible car and motor buses. Also of interest



Type of Car	Percentage of Service Rendered 1918	1925	Type of Car	Percentage of Service Rendered 1918	1925
25′ BOX	35.4	1.6	TRAILERS	4.2	5.8
26′-6″ BOX	4.5	2.2	CENTRE ENTRANCE	5.3	27.1
ARTICULATED	12.9	0.0	BIRNEY SAFETY	0.0	1.4
*1*2*3 SEMIS	8.7	6.1	*5 SEMI	0.0	31.8
*4 SEMI	25.9	18.7	MOTOR BUSSES	0.0	4.1
			FOREIGN CARS	3.1	1.2
				100.0	100.0

A Graphic Story of Progress

is the fact that whereas in 1918 nearly 13 per cent. of the service was operated with articulated cars, no cars of this type are in service today. Whereas practically 40 per cent. of the service in 1918 was operated with box cars only 3.8 per cent. is so operated today. In other words, only 9.9 per cent. of the surface service is operated with vehicles that are not strictly modern—by modern, meaning cars which have come with the advent of the No. 4 semi-convertible car on this system.

Such a transformation in the rolling stock which renders service on the property speaks for itself.

RESERVE FUND

July 1, 1924 $1,000,000

July	1924	**deficit**	$353,245.79
August	“	“	445,820.47
Sept.	“	“	207,334.30
Oct.	“	“	36,155.55
Nov.	“	surplus	15,031.47
Dec.	“	“	152,527.52
Jan.	1925	“	269,649.08
Feb.	“	“	118,183.05
March	“	“	211,955.71
April	“	“	130,636.68
May	“	“	139,081.44
June	“	**deficit**	25,792.94
Profit and **Loss**			$51,865.43

July 1, 1925 $1,000,000

July	1925	**deficit**	**$249,477.93**
August	“	“	**367,593.94**

Note: The reserve fund is the barometer which shows the financial condition of the property month by month. Its seasonal fluctuations are periodic, as it is lowest in summer and highest in mid-winter. Until the reserve fund is restored repayment to the municipalities of the millions of dollars advanced by them cannot be made.

JULY OPERATION

	1925	1924
Cost of service exceeded revenue	$249,477.93	$353,245.79
Ratio operating expense to operating revenue	79.23%	82.44%
Operating revenue per car mile operated	56.77c	54.45c
Operating revenue per car hour (A. E. R. A. standard)	$5.49	$5.19
Revenue passengers	27,119,429	28,763,956
Per cent. 5c and 6c passengers	17.25%	26.76%
Average fare per revenue passenger	9.279c	8.633c
Revenue passengers per car mile operated	5.995	6.188
Car miles operated		
Rapid-transit lines	1,193,204	1,229,237
Surface, two-man	1,983,587	2,314,239
Surface, one-man	1,112,084	1,039,508
Motor bus	224,646	60,036
Express, newspaper and sprinkler cars	9,821	9,289
Total	4,523,342	4,652,309
Trips operated	594,131	593,664
Employes complained of by car riders	68	94
Complaints in regard to car service	17	8
Average number of witnesses per accident	3.6	3.5
D.C.K.W. hour output gross for month	16,524,055	17,690,920
Maximum K. W. load	55,280	58,080
Tons of coal consumed	14,302	15,403
Lbs. of coal burned per D. C. K. W. hour at cars	1.944	1.956
Revenue passengers carried per accident	31,100	31,959
Accidents per 10,000 car miles	1.92	1.93
Car defects reported per 10,000 car miles	5.3	6.2
Operating and maintenance cost of power, including depreciation:		
Per K. W. hour for car service	1.18c	1.19c
Per revenue car mile	4.20c	4.28c

Sept. 10, 1925.

EDWARD DANA, *General Manager.*

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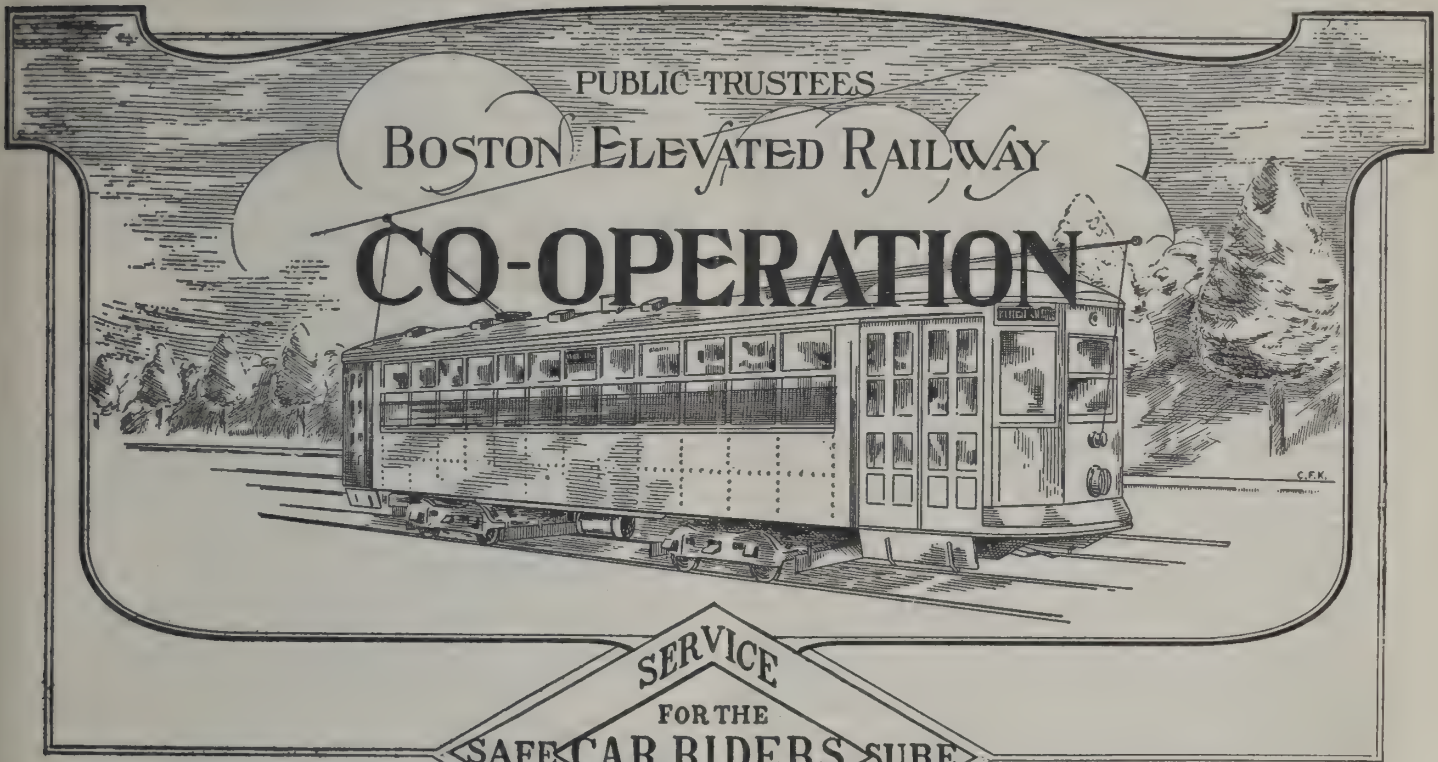
Vol. 4 SEPTEMBER, 1925 No. 9



PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

CO-OPERATION

SERVICE
FOR THE
SAFE CAR RIDERS SURE
SATISFACTORY

THIS MONTH'S FRONTISPIECE

Our cover design in this issue shows the new Reservoir lobby which has just been completed and put into service.

It had been realized for a long time that the old lobby at this station was inconvenient, and not up to the high standard set by our new lobbies at other locations. After considerable study, it was decided that the logical location for the lobby in this neighborhood was on Prendergast Avenue, adjoining the yard, and it was found possible to acquire an excellent site, which was already occupied by a modern brick building.

This building has been successfully adapted to our lobby requirements. The lobby, locker room, station master's office, money counting room, receiver's office and toilets are all located on the first floor, occupying a total area of 3700 square feet. The boiler room and shower baths are located in a basement.

The equipment of the building is in keeping with that at other stations, and every consideration has been given to the comfort and convenience of the occupants. The interior is intentionally plain, with a view to cleanliness, but with its rubber-tile flooring, good lighting and ventilation, it will compare favorably with the best facilities provided anywhere.

WATCH YOUR GAS-STOVE FLUES

With the coming of cold weather it will not be amiss to give a word of warning concerning poisoning by carbon monoxide gas from domestic heating appliances. The flueless gas heating stoves are responsible for most of the poisoning. Gas water heaters also cause some deaths and asphyxiations. During the winter of 1922-'23 there were 64 deaths and 113 cases of partial asphyxiation in the State of Ohio. Of these 41 deaths and 46 asphyxiations were due to heaters, generally of the radiant type. For the winter of 1923-'24 there were in the State of Ohio 61 deaths, 42 of which were due to gas heaters.—*Journal Amer. Pub. Health Assn.*

BOSTON AND PHILADELPHIA WAGES COMPARED

In the Sept. 12 issue of "Service Talks," a leaflet distributed by the Philadelphia Rapid Transit Company, Prof. J. H. Willitts' testimony before the Pennsylvania Public Service Commission is quoted in part as follows:

> "From January, 1925, to June, 1925, inclusive, P. R. T. surface trainmen received a total of $6,055,644 as wages. If this figure were put on an annual basis this would mean an average annual wage for trainmen of $2,046.50. These wage figures include pay for overtime work, for Sunday work and for holiday work, and mean an average weekly wage per employe of $39.36.
>
> "A comparison of P. R. T. wage rates with other street railways reveals that P. R. T. motormen and conductors are paid better than are those of any of the other large cities of the country. Such a differential would have to find its justification in the better service furnished by the motormen and conductors of P. R. T. to which the company must give testimony since it is a problem of transit engineering."

Exhibits, in the arbitration proceedings, of the payrolls of the Boston Elevated Railway for surface conductors and motormen show that the average week's work was 6.37 days, the average daily wage $6.23 and the average weekly wage $39.68, on the same basis as the Philadelphia wages above referred to. It is plainly evident, in view of the fact that the average earnings on the B. E. Ry. are $39.68 a week and on the P. R. T. $39.36, that the other conditions surrounding the operation of runs in Boston must be superior to those in Philadelphia. This is a fact, as time is not allowed for reporting and turning in. There is no guaranteed eight-hour day's pay and no allowances are paid for outside spread of hours. It is a further fact that the platform time varies in Philadelphia from eight to eleven hours, whereas no platform time exceeds eight hours fifteen minutes on the Boston system. Wages cannot be compared merely in terms of rates per hour.

BOWLING SEASON OPENS

The 1925-'26 bowling season opened with a rousing gathering on Sept. 29, the guest of honor being the General Manager. There are sixteen teams in the Boston Elevated Bowling League, which plans for thirty evenings of bowling this season at the North Station Alleys, 222½ Friend Street, Boston.

INTEREST IN SAFETY REWARDED

On Sept. 28 ten Boston Elevated car and train-service men left the city to attend the 14th Annual Safety Congress of the National Safety Council in Cleveland. The delegation was made up as follows: Bowler, L. A., conductor Div. 1; Cronin, W. M., conductor Div. 2; Fleming, Jos., rapid-transit guard; Kempton, W. A., conductor Div. 4; Michael, R. H., bus operator Div. 3; O'Neill, F. J., rapid-transit motorman; Sheedy, W. M., bus operator Div. 4; Sullivan, J. D., motorman Div. 3; Tresilian, G. H., conductor Div. 1; Tuffey, R. J., conductor Div. 2.

These men, two from each division, were sent to Cleveland because last June they handed in the best examination papers based on the series of safety "talks" sent out from the office of the General Manager early in 1925. On Dec. 1, 1924, he promised that the two men from each division who in the opinion of qualified judges prepared the best papers and whose accident record after Jan. 1, 1925, had been meritorious would be suitably rewarded. The nature of the reward was not specified, but the one later determined upon by the management is appropriate and its substantial character indicates the importance placed by the management upon interest in accident prevention. The visit to Cleveland, which extended from Sept. 28 to Oct. 2, inclusive, gave

All Aboard for the Safety Congress of the National Safety Council the men not only the opportunity to meet the leaders in the safety movement, but also to see a beautiful city and a well-known street-railway system.

EARNING POWER OF RUNS

The following table was Exhibit No. 115 in the railway's presentation before the arbitration board in the proceedings recently closed. It shows the earning power of all the weekday runs on timetables in effect at all surface stations on Aug. 15, 1925. The average earning power of all runs, 1-man and 2-man, was $6.26, the minimum 2-man earning power being $5.80 and the maximum $7.07, while the minimum 1-man earning power was $6.44 and the maximum $7.85.

As no man can receive less than $5.80 under the guarantee plan if he is on duty eight hours, it is interesting to note what the actual earning powers of the various runs are at the present time.

"BUSINESS HAS A HUMAN SIDE"

A friendly suggestion received from a passenger is that when the rear end of a car is crowded, the conductor should use some such words as: "Please move forward and give some of the other folks who want to go home a chance to get on the car." The passenger making the suggestion believes that such language would be more effective than the routine request, "Please move forward."

Whether a conductor should take a particularly active interest to determine if his passengers are going home or to a theatre, or to a church, is something that depends on the conditions and disposition of his riders. Nevertheless, there is a good thought in keeping the human side of the transportation business well in mind. The street car is a vehicle of mass transportation but every passenger has his own particular need in this trans-

Pay hours	Outside hours	No. 2-man runs	Day's pay	Total	No. 1-man runs	Day's pay	Total	Grand total
8.00	11.00	760	$5.80	$4408.00	241	$6.44	$1552.04	
	11.15	20	5.85	117.00	..	6.49	....	
	11.30	27	5.89	159.03	1	6.54	6.54	
	11.45	39	5.94	231.66	4	6.59	26.36	
	12.00	52	5.98	310.96	6	6.64	39.84	
	12.15	43	6.07	261.01	2	6.74	13.48	
	12.30	48	6.16	295.68	1	6.84	6.84	
	12.45	36	6.25	225.00	3	6.94	20.82	
	13.00	34	6.34	215.56	5	7.04	35.20	
	13.15	31	6.43	199.33	6	7.14	42.84	
	13.30	42	6.53	274.26	8	7.25	58.00	
	13.45	40	6.62	264.80	4	7.35	29.40	
	14.00	81	6.71	543.51	12	7.45	89.40	
8.15	11.00	265	5.98	1584.70	177	6.64	1175.28	
	11.15	2	6.03	12.06	2	6.69	13.38	
	11.30	2	6.07	12.14	6	6.74	40.44	
	11.45	9	6.12	55.08	1	6.79	6.79	
	12.00	7	6.16	43.12	2	6.84	13.68	
	12.15	18	6.25	112.50	3	6.94	20.82	
	12.30	12	6.34	76.08	3	7.04	21.12	
	12.45	8	6.43	51.44	2	7.14	14.28	
	13.00	11	6.52	71.72	5	7.24	36.20	
	13.15	6	6.61	39.66	6	7.34	44.04	
	13.30	12	6.71	80.52	7	7.45	52.15	
	13.45	18	6.80	122.40	6	7.55	45.30	
	14.00	25	6.89	172.25	10	7.65	76.50	
8.30	11.00	111	6.16	683.76	138	6.84	943.92	
	11.15	1	6.21	6.21	2	6.89	13.78	
	11.30	..	6.25	.....	2	6.94	13.88	
	11.45	4	6.30	25.20	3	6.99	20.97	
	12.00	5	6.34	31.70	2	7.04	14.08	
	12.15	7	6.43	45.01	3	7.14	21.42	
	12.30	8	6.52	52.16	7	7.24	50.63	
	12.45	9	6.61	59.49	6	7.34	44.04	
	13.00	19	6.70	127.30	8	7.44	59.52	
	13.15	6	6.79	40.74	6	7.54	45.24	
	13.30	7	6.89	48.23	6	7.65	45.90	
	13.45	3	6.98	20.94	5	7.75	38.75	
	14.00	5	7.07	35.35	5	7.85	39.25	
	Total	1833		11,115.56	716		4832.17	$15,947.73
	Average			$6.06			$6.74	$6.26

portation. A recognition of the individual needs will avoid the cut and dried type of business and make for better relations.

It is good business to anticipate what a customer needs and to meet those needs as nearly as possible.

SAVING TIME FOR OUR PATRONS

A helpful device is the annunciator recently installed in the Maverick Square station to indicate to the starter the location of trains in the East Boston tunnel between Atlantic Avenue and Maverick terminal. Each lamp indicates, when lighted, that the block to which it is connected is clear or unoccupied, and *vice versa.*

If a surface car is ready to leave the station and is empty or only partly filled, and the annunciator shows that a train is due in a few seconds, the starter holds the car. This permits the passengers to transfer without delay and at the same time permits a much more even distribution of the surface-car loads.

Before the annunciator was installed it frequently happened that the starter would dispatch his cars on their return trip with no load, or a light load, in order to adhere to the schedule.

Each of the Ten Lamps Represents a Track Section in the Tunnel

GETTING THE SAFETY MESSAGE OVER TO THE CHILDREN

An opportunity was afforded the General Manager to assist in the safety movement through an invitation to broadcast a message from WEEI station on Sept. 17. He spoke as follows:

"Good evening, members of the Big Brother Club.

"It was not so long ago that I had the pleasure of talking to you, but when I was asked by Big Brother to talk to you this evening I felt that you might prefer to have someone whom you had not heard before. But before replying to him I thought it over and decided that you would not like it if I failed to answer the call of your Big Brother and that he knew best what to arrange for you and so here I am, glad to have the privilege of talking to you boys and girls again.

"You have heard a great deal about avoiding accidents and being careful. Some of you may think that you have heard enough about such matters. Little brothers, you can never hear or know too much about being careful. You, as you grow up, will be called upon to exercise greater and greater caution as the years go by.

"Inventions which are now unknown will most surely bring problems with which you will be faced. If you realize what happens, what saving and suffering can be secured from the simple practice of being careful, you will welcome all the aid that can be given to you to join the careful people rather than allow yourself to drift among the careless people.

"The Boston Elevated Railway carries people from place to place. Its cars, trains and buses are moving about all the time. The people it carries are moving on and off these cars.

"When objects or people are in motion, then comes the opportunity for accidents. If we keep still in one place there are to be sure some accidents which may happen to us, but it is when we move about and others move about with us, some fast, some slow, that the chance is greatest to have accidents.

"As I have said before, the men running the cars of the Boston Elevated have little boys and girls whom they love and they do not want to have a single accident if they can prevent it.

"Sometimes they make mistakes and are careless but they are constantly reminded of the lessons of safety and do their best to avoid hurting or harming anybody.

"But even if they were never careless it would not prevent accidents if little girls and boys or other people using the highways were careless. The best they can do is to be careful themselves. They cannot be careful for somebody else.

"When I used to go to the public schools—and it wasn't very many years ago, let me tell you—such a thing as having the teacher tell the children to be careful and not get hurt in the streets was never even thought of. In those days all the travel was by horse-drawn vehicles. Even the street cars formerly were pulled around by a pair of horses, and as you can see, the car couldn't go very fast so accidents in the streets were very few. Then the trolley car was invented and its use meant much quicker movements in the street. The trolley car was followed by the pleasure automobile and the big auto trucks and with them all people had to move faster and far more carefully in using the highways. But carefulness on the part of the public did not increase as fast as the dangers in the street—so when we really woke up and saw how great was the number of deaths and injuries coming from street accidents, then we all began to try to use more care in our use of the streets and to teach others to do so also. So, today, the schools, the State Government, the National Government, and nearly everybody are doing their part to prevent people getting hurt on the streets and that is why I am talking to you this evening.

"School days are now here and you boys and girls have had the benefit of the summer vacation, I hope.

"I hope that you have made the most of it and that you are brown and sunburned and feeling fine after so much time out of doors.

"When you go back to school and ride on the cars, why not speak to the conductor and motorman and tell them that this year you are going to help them to avoid accidents and then see that you bear it in mind every day.

"I know personally that they will be impressed with the desire to do all they can to avoid accidents, especially if they hear the voices of you little boys and girls politely tell them you want them to do so and you are going to help make a good record this school year.

"Of course there are many highway dangers which you must be careful to avoid but as far as the street car is concerned there are only a few things to be careful about.

"First—Never ride on the outside of a car. That is not the place to ride and you are inviting serious accident or possibly running the chance of being killed.

"Second—Always look both ways and never run across street car tracks if a car is near. There is plenty of time to cross when cars are not near.

"Third—Do not play in the streets where street cars are operated because you may become so interested in your play that you forget all about being careful.

"Fourth—When you ride on the cars never get on and off when the car is in motion and be sure that it is safe to get on or off before you do so.

"If you will bear these four simple things in your mind this year you will be happy in the knowledge that you are doing all you can to avoid accident in connection with street cars.

"Some of you may remember that when I talked to you about a year ago I closed my remarks by reading you a poem which had been sent in to the Elevated Railway by a little girl, when our Prize Poem Contest was on some years ago. Well, I am going to do exactly the same thing tonight and I am going to read you a poem by a little girl who was then in the Charlestown High School. She was one of the prize winners. She may be married now, with children of her own to whom she may quote the very words I shall repeat to you as a warning to all the boys and girls. Here it is. It is entitled:

LOOK AND SEE IF THE WAY IS CLEAR

Children, listen! I want to say
A few short words to you today.
Whether you're in or out of school,
It's well to know this simple rule:

Before you cross the busy street,
Always steady your nimble feet;
Then, lest a trolley should be near,
Look! and see if the way is clear.

The trolley is a dang'rous thing,
And death to careless ones may bring.
So, heed this warning! Do you hear?
Look! and see if the way is clear.

The auto, too, is cause for dread;
It has left people lying dead.
But, if you heed, you need not fear;
Look! and see if the way is clear.

There are, of danger, many kinds
Which are unknown to children's minds;
So heed this good advice you hear;
Look! and see if the way is clear.

And when through diff'rent paths of life
You meet with crossings, noise and strife,
Then think! before your course you steer.
Look! and see if the way is clear.

FIRE PREVENTION WEEK

This week (Oct. 4-10) is "Fire Prevention Week." It is a time for those who are in a position to do so to call the attention of others to our annual fire losses and what may be done to lower them. It is a campaign in which employes and employers may well join, for in 1924 the losses from fire amounted to 548 million dollars and 15,000 lives were sacrificed.

LINES TO REMEMBER

Forget each kindness that you do
As soon as you have done it;
Forget the praise that falls to you,
The moment you have won it;
Forget the slander that you hear
Before you can repeat it;
Forget each slight, each spite, each sneer,
Wherever you may meet it.
Remember every kindness done
To you, whate'er its measure;
Remember praise by others won,
And pass it on with pleasure;
Remember every promise made
And keep it to the letter;
Remember those who lend you aid,
And be a grateful debtor.

TAKE TIME FOR COURTESY*

It was not so long ago that little groups of commuters rode daily to and from the growing city in horse cars with a proverbially genial driver and conductor. It was a new service much appreciated and those who rode and those who served had time for friendly salutations and often knew each other's names. There was opportunity for contact then and the old saying that "A smile is the light in the window of the face by which the heart signifies it is at home," was accepted and appreciated.

But those days have slipped away, and the city civilization which was ushered in at that time has brought faster moving traffic and greater crowds.

Mass transportation is with us and the contact has become impersonal now as compared with its personal aspect then.

We could not have the old days back if we would, but there is no reason why we cannot appreciate Emerson's remark that "Life is not so short but that there is always time enough for courtesy."

Neither the car operator nor the car rider is justified today in treating the service in such an impersonal way. It is and always has been very much a personal service and while surrounded by modern conditions can still be made a pleasant contact.

We have since 1919 made a very good record in reducing acts of discourtesy on the part of those who serve the public on the platforms of cars and trains.

It is a duty of riders in the interest of the service to advise of errors upon the part of operators in this respect. Good deeds should be reported also, because nothing encourages the right kind of service as much as the knowledge that attention is paid to good service as well as to errors.

Of course all that has been said applies equally to contact along other lines in our every-day modern civilization. Most of the rough spots arise because of veins of selfishness which we are constantly called upon to master.

Imagine for a moment what a very different picture our great transportation system would paint for us if for one single day in the year as an example every conductor and motorman was wreathed in smiles no matter what occurred. Imagine every car rider likewise radiating goodwill and toleration for the men in the service and his fellow passengers. It would seem like a different world. Having for a day such an ideal we might attain it—ultimately.

A man who blushes is better than one who turns pale.—*Cato.*

WORK—A SONG OF TRIUMPH

Work!
Thank God for the might of it,
The ardor, the urge, the delight of it—
Work that springs from the heart's desire,
Setting the brain and the soul on fire—
Oh, what is so good as the heat of it,
And what is so glad as the beat of it,
And what is so kind as the stern command,
Challenging brain and heart and hand?

Work!
Thank God for the pride of it,
For the beautiful, conquering tide of it,
Sweeping the life in its furious flood,
Thrilling the arteries, cleansing the blood,
Mastering stupor and dull despair,
Moving the dreamer to do and dare.
Oh, what is so good as the urge of it,
And what is so glad as the surge of it,
And what is so strong as the summons deep,
Rousing the torpid soul from sleep?

Work!
Thank God for the pace of it,
For the terrible, keen, swift race of it;
Fiery steeds in full control,
Nostrils aquiver to greet the goal.
Work, the Power that drives behind,
Guiding the purposes, taming the mind,
Holding the runaway wishes back,
Reining the will to one steady track,
Speeding the energies faster, faster,
Triumphing over disaster.
Oh, what is so good as the pain of it,
And what is so great as the gain of it?
Anr what is so kind as the cruel goad,
Forcing us on through the rugged road?

Work!
Thank God for the swing of it,
For the clamoring, hammering ring of it,
Passion of labor daily hurled
On the mighty anvils of the world.
Oh, what is so fierce as the flame of it?
And what is so huge as the aim of it?
Thundering on through dearth and doubt,
Calling the plan of the Maker out.
Work, the Titan; Work, the friend,
Shaping the earth to a glorious end,
Draining the swamps and blasting the hills,
Doing whatever the Spirit wills—
Rending a continent apart,
To answer the dream of the Master heart.
Thank God for a world where none may shirk—
Thank God for the splendor of work!

—*Angela Morgan.*

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*A contribution by Mr. Dana to a symposium in the Boston Traveler of Aug. 22, 1925, on "How Can Street Car Manners Be Improved?"

RESERVE FUND

July 1, 1924 $1,000,000

July	1924	**deficit**	$353,245.79
August	“	“	445,820.47
Sept.	“	“	207,334.39
Oct.	“	“	36,155.55
Nov.	“	surplus	15.031.47
Dec.	“	“	152,527.52
Jan.	1925	“	269.649.08
Feb.	“	“	118,183.05
March	“	“	211,955.71
April	“	“	130.636.68
May	“	“	139,081.44
June	“	**deficit**	25,792.94
Profit and **Loss**			$51,865.43

July 1, 1925 $1,000,000

July	1925	**deficit**	$249,477.93
August	“	“	367,593.94

Note: The reserve fund is the barometer which shows the financial condition of the property month by month Its seasonal fluctuations are periodic, as it is lowest in summer and highest in mid-winter. Until the reserve fund is restored repayment to the municipalities of the millions of dollars advanced by them cannot be made.

AUGUST OPERATION

	1925	1924
Cost of service exceeded revenue	$367,593.94	$445,820.47
Ratio operating expense to operating revenue	82.65%	85.76%
Operating revenue per car mile operated	55.24c	53.41c
Operating revenue per car hour (A. E. R. A. standard)	$5.34	$5.09
Revenue passengers	26,298,086	27,640,267
Per cent. 5c and 6c passengers	17.56%	27.04%
Average fare per revenue passenger	9.266c	8.640c
Revenue passengers per car mile operated	5.844	6.059
Car miles operated:		
Rapid-transit lines	1,193,091	1,219,316
Surface, two-man	1,967,046	2,233,871
Surface, one-man	1,089,149	1,023,097
Motor bus	238,249	74,919
Express, newspaper and sprinkler cars	11,951	10,672
Total	4,499,486	4,561,875
Trips operated	588,783	584,134
Employes complained of by car riders	103	93
Complaints in regard to car service	16	7
Average number of witnesses per accident	3.5	3.8
D.C.K.W. hr. output gross for month	16,434,970	17,297,190
Maximum K. W. load	54,300	55,520
Tons of coal consumed	14,801	14,895
Lbs. of coal burned per D.C.K.W. hr. at cars	2.023	1.934
Revenue passengers carried per accident	29,907	32,944
Accidents per 10,000 car miles	1.95	1.84
Car defects reported per 10,000 car miles	4.5	6.8
Operating and maintenance cost of power, including depreciation:		
Per K. W. hr. for car service	1.23c	1.15c
Per revenue car mile	4.43c	4.12c

Sept. 10, 1925.

EDWARD DANA, *General Manager.*

*9385.744b=5

Vol. 4 OCTOBER, 1925 No. 10

PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

Jan. 7, 1932

CO-OPERATION

SERVICE
FOR THE
SAFE CAR RIDERS SURE
SATISFACTORY

THIS MONTH'S FRONTISPIECE

The first page of this issue shows the Massachusetts Avenue incline to the Cambridge-Main Street subway. Properly to locate this incline to accommodate cars from Huron Avenue and from the north on Massachusetts Avenue, without obstructing traffic in Massachusetts Avenue by narrowing the street, it was found necessary to place it on a portion of the Cambridge Common lying between Cambridge Street, Peabody Street and Massachusetts Avenue, and to discontinue Kirkland Street from Massachusetts Avenue to Peabody Street.

To insure harmony of this incline with the existing surroundings, that is, the buildings and grounds of Harvard University and the Cambridge Common, required architectural skill of the highest order. Robert Peabody, of Peabody and Stearns, consulting architects, in charge of this work, very successfully solved this problem.

To screen the portal at the southerly end of the incline, the Sumner monument (not visible in the drawing) was first removed and afterwards replaced on a raised platform semicircular in outline. The approach to the statue is now by broad steps encircling the platform, back of which is a screen of tapesty brickwork. The floor of the platform was made in a pleasing design of brick and concrete.

The incline itself from the portal to the line of Kirkland Street is 321 feet in length, the surface tracks being laid on a grade of 5 per cent down from Cambridge Street toward Harvard Square.

The walls of the incline are of ornamental brick and stone construction, with ornamental posts capped with ornate wrought-iron electric-light standards. This wall harmonizes with the Harvard College fence and is further softened or screened by shrubbery planted along the sides.

The incline is by far the most ornamental and pleasing of those forming part of the subways and tunnels in the Boston Elevated system.

The total number of car trips operated inbound and outbound on this incline is 1900 daily. The total number of passengers handled in and out approximates 62,000. The average headway in the normal hours is a car trip every two minutes and in the rush hours every 48 seconds.

MUSICAL CLUB PLANS

The Musical Club, which acquitted itself so well in the "Best Ever" last spring, plans to start rehearsing at once for the performance of this winter. It has retained Eugene McDonald as director, and we may look forward to evenings of enjoyment later on.

ACCIDENTS

Leaves are falling, the temperature variation between day and night is greater than in summer and operators of cars, trains and buses must continually bear in mind the necessity of avoiding accidents instead of explaining them after they have occurred. Car collisions have increased. There is no possible excuse for collisions of cars. Avoid accident. Be careful.

A GOOD START

The Corporation Bowling League opened its season on Monday evening, Oct. 9. The Boston Elevated team won all four points from its opponent.

100 NEW NO. 5-TYPE CARS

Delivery is expected of the first of the hundred new No. 5-type cars ordered in July, 1925. These cars will be distributed over the entire system, being assigned to North Point, Fields Corner, Cypress Street, Charlestown, Clarendon Hill, Eagle Street, Everett and Salem Street. When these cars are all in service the percentage of service operated by modern equipment will be greatly increased.

THE GENERAL COUNSEL'S DEPARTMENT AND ITS DUTIES

Below appears a picture of the legal staff in charge of the general legal work of the company. In the center is H. Ware Barnum, general counsel; on his right is Charles B. Gleason, attorney, and on his left, Ransom C. Pingree, assistant general counsel. This department takes care of all the legal work of the company except that arising out of accidents. Its work includes representing the company as counsel before the Legislature and all public boards and authorities, defense and prosecution of contract claims, equity cases, bus cases, real-estate damages, cases in admiralty, tax cases, purchase and sale of real estate, general advice to heads of departments and preparation or approval of deeds, contracts, takings and other documents.

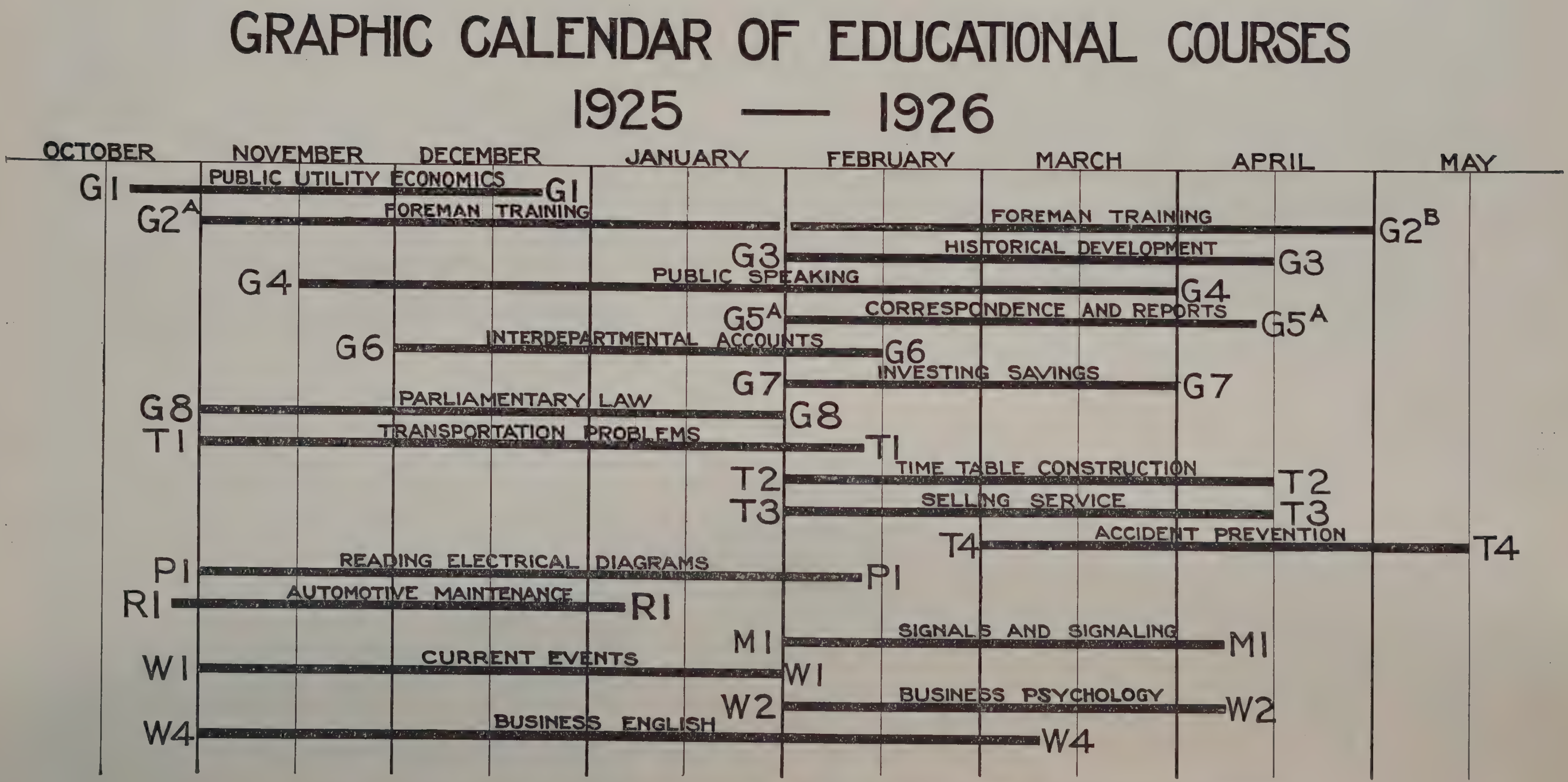
KEEPING THE CARS CLEAN

Of the many details in connection with the maintenance of car equipment of which the average person has no conception as to the amount of time and work involved, car cleaning is certainly one. It would not involve much work if we were considering only one car, but when over two thousand cars must be kept clean it becomes an item of importance.

In our cars over a million persons are carried every day. Many of them are critical of the appearance of the cars. This reminds one of the drummer, who on entering a hotel dining room one morning for breakfast, was asked by the waiter what he would like. He replied, "A boiled egg and a kind word." When the waiter, in silence, brought on the egg, he was asked, "Now, where is the kind word?" his only answer was "Don't eat the egg." Now, unless a car is to be considered by the public to be in the same class as the waiter considered the egg, it must have spent on it an average of over an hour a day.

(Continued on page 6, column 2.)

The Legal Staff in Repose



GRAPHIC CALENDAR OF EDUCATIONAL COURSES
1925 — 1926

A Study of This Chart Will Enable One to Get a Bird's-Eye View of the Season's Program.

THE EDUCATIONAL PROGRAM

The diagram opposite indicates approximately the period to be covered by each of the courses scheduled in the prospectus distributed last month.

One course has been added to the original program, G-8—Parliamentary Law. This will cover practice in taking part in meetings, a form of applied public speaking, and is open to both men and women. It has been popular where given and is strongly recommended by the Massachusetts Department of Education.

The following gives supplementary information regarding the courses which start soon:

G 1—Public Utility Economics. Monday evenings at 7:30 at the instruction school, Sullivan Square. Dates: Oct. 19, Oct. 26, Nov. 2, Nov. 9, Nov. 16, Nov. 23, Nov. 30, Dec. 7, Dec. 14, Dec. 21. No fee for this course.

G 2—Foreman Training. The registration for this course has been particularly heavy. Details will be communicated by mail to those who have registered tentatively. No fee for this course.

G 3—How City Transportation Developed. As this course does not start until Feb. 1 the details will be taken up later.

G 4—Public Speaking. (Originally advertised for railway men, but now to include both men and women.) Wednesday evenings at 7:30 at the instruction school, Sullivan Square. Dates: Nov. 18, Dec. 2, Dec. 9, Dec. 16, Dec. 23, Jan. 6, Jan. 20, Jan. 27, Feb. 3, Feb. 10, Feb. 17, Feb. 24, March 3, March 10, March 17, March 24. Fee $2 for each half.

This large class will meet together for the first time and will then probably be divided into sections to suit the convenience of the members.

G 5—Correspondence and Reports. As this course does not start until Feb. 5 the details will be taken up later.

G 6—Interdepartmental Accounts. This course will be administered under the direction of the auditor's department which will communicate with the registrants as to details.

G 7—How To Invest One's Savings. As this course does not start until Feb. 4 the details will be taken up later.

G 8—Parliamentary Law. This course, if there is a reasonable demand for it, will be given at the instruction school, Sullivan Square, at 6:30 Thursday evenings as follows: (Nine lessons only)—Nov. 5, Nov. 12, Nov. 19, Dec. 3, Dec. 10, Dec. 17, Jan. 7, Jan. 21, Jan. 28. Fee $2.

T 1—Transportation Problems as a Whole. Friday mornings at 10:30 and Friday evenings at 7:30 at the instruction school, Sullivan Square. Dates: Nov. 6, Nov. 13, Nov. 20, Dec. 4, Dec. 11, Dec. 18, Jan. 8, Jan. 22, Jan. 29, Feb. 5. No fee for this course.

T 2—Timetable Construction.

T 3—Selling Service.

T 4—Accident Prevention.

As all of these courses do not start until after Feb. 1 the details will be taken up later. Arrangements will be made for both morning and evening sections in these courses. It is likely also that a section of T 4 will be arranged for employees interested in industrial accident prevention as distinguished from transportation accident prevention.

P 1—Reading of Electrical Diagrams and Other Drawings. Friday evenings at 7:30 at the instruction school, Sullivan Square. Dates: Nov. 6, Nov. 13, Nov. 20, Dec. 4, Dec. 11, Dec. 18, Jan. 8, Jan. 22, Jan. 29, Feb. 5. Fee $3.

R 1—Automotive Maintenance, With Special Reference to Buses. Thursday evenings at 7:30. First meeting at the instruction school, Sullivan Square (Oct. 29); places of later meetings to be announced at first meeting. Dates: Oct. 29, Nov. 5, Nov. 12, Nov. 19, Dec. 3, Dec. 10, Dec. 17, Jan. 7. Fee $3.

M 1—Signals and Signaling. As this course does not start until Feb. 4, details will be taken up later.

W 1—Current Events. (Name changed from "Women's Work on the Boston Elevated Railway.") Thursday evenings at 7:30 at the instruction school, Sullivan Square. Dates: Nov. 5, Nov.

12, Nov. 19, Dec. 3, Dec. 10, Dec. 17, Jan. 7, Jan. 21, Jan. 28, Feb. 4. Fee $1.

W 2—Business Psychology. As this course does not begin until Feb. 4 the details will be taken up later.

W 3—Public Speaking for Electric Railway Women. The registration for this course is so small that it has been combined with G 4.

W 4—Business English. Thursday evenings at 6:30 at the instruction school, Sullivan Square. Dates: Nov. 5, Nov. 12, Nov. 19, Dec. 3, Dec. 10, Dec. 17, Jan. 7, Jan. 21, Jan. 28, Feb. 4, Feb. 11, Feb. 18, Feb. 25, Mar. 4, Mar. 10. Fee, $8.50, including text-book.

In the cases of all courses which come under the supervision of the Massachusetts Department of Education, rolls of those who have tentatively registered for the courses are being sent to the department, which in turn sends out notices giving details. All persons who complete the courses in accordance with the requirements of the department will receive State Certificates. All others who attend regularly will receive statements from the Boston Elevated Railway to that effect.

The preliminary registration for the other courses will stand until the first meeting of each class, at which time the registration can be either confirmed or cancelled.

The initial meeting of the course in Public Utility Economics was held on the evening of Oct. 19, with the General Manager as the principal speaker. He demonstrated the value of the public utility as an employer, and every listener went away with an enhanced appreciation of what it means to serve the public through a public utility in general and the Boston Elevated Railway in particular.

DON'T OVERLOOK COURSE G 8

Registrations for the course in parliamentary law should be sent as promptly as possible to the General Manager's office or handed to departmental members of the educational committee.

Car Cleaning

(Continued from page 3, column 2.)

While an hour a day does not seem much, it amounts to over 800,000 hours or 100,000 days in a year's time for the 2200 cars owned. The annual cost under the item of "Car Cleaning" amounted as follows: 1924, $477,058; 1923, $424,621; 1922, $387,609; 1921, $400,601; 1920, $432,920; 1919, $443,088; 1918, $262,108; 1917, $176,643; 1916, $231,124.

To keep a car clean, the entire outside surface, including glass, requires daily mopping with a soft mop, and the vestibule glass on both sides and the inside of all windows must be gone over with a damp chamois or cloth to remove all streaks and spots.

The magnitude of this work can best be realized by the statement that the area to be gone over is over 52 acres for every cleaning. Of this amount 14¼ acres represents glass surface, which would cover quite a sizeable farm under glass. As this glass must be cleaned on both sides, it means that there are 28½ acres of glass surface to be cleaned. To make the job still more difficult, this area of glass is cut up into 209,480 pieces, or lights of glass. These lights are set in frames with eight corners inside and out, or a total of 1,675,840 corners to clean. The intersections between the glass and frames also forms a corner, and this amounts to 2,800,426 lineal feet, or about 530 miles of frames.

After every storm all surface cars are washed thoroughly with clean water, as the car surface becomes streaked from dirt washed from roof. With our outdoor storage the problem of keeping cars clean in winter is made more difficult, as little or no water can be used.

Daily, generally at night, the floor of the car must be swept clean, a solution of water and disinfectant being used to lay the dust and sterilize the interior.

After the car is swept and the dust is allowed to settle, it is thoroughly dusted and the lamps, hand straps, window sills and register glass are wiped with a dry towel.

Once every month or two according to the condition of the car, it is given a thorough cleaning inside and out, using in addition to water some cleansing compound which will effectively remove all stains without injuring the paint or scratching the glass.

The entire work of cleaning cars would be much simplified if it could be reduced to a purely routine process; if all cars could be treated alike and similar work done every day, but such is not the case. Cars running through a paved city section present a different problem from those running where street are macadamized. Cars stored under cover require much less work than those stored in the open. Keeping cars clean in rainy weather is different from in fair weather, and cars which run in subways or tunnels are harder to keep clean than those which do not.

The last-named represents our greatest problem, and affects a larger percentage of our cars, but more particularly those of the rapid-transit lines. Underground, the dry dust, with its fine particles of iron from the grinding of brakeshoes, is constantly kept in motion by the rapid movement of the trains. Accumulation of this dust on the cars in a wet condition becomes iron oxide or rust, one of the most difficult to remove from glass and painted surfaces.

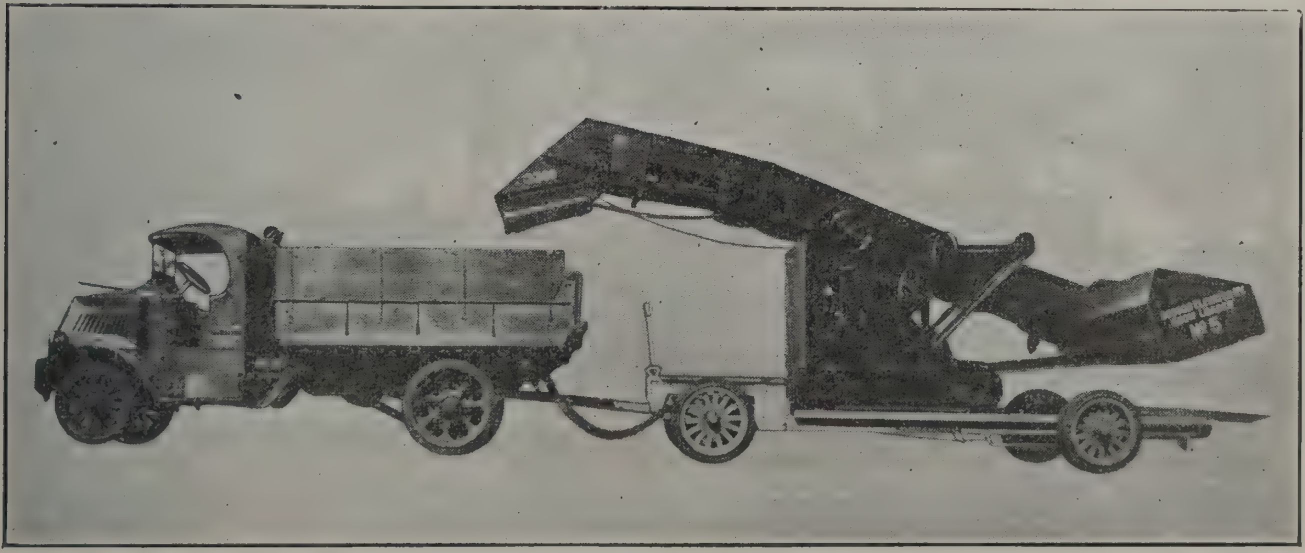
GETTING READY FOR WINTER

The accompanying photograph shows the new highway trailer recently purchased for the surface lines division of the maintenance department. The trailer will be used for transporting certain track rebuilding machinery, such as a 10-ton tandem steam roller and concreting machinery, and also for handling our fleet of five Barber-Greene snow loaders.

On the truck is a new snow-loader which happened to arrive at the same time.

The highway trailer is 22 ft. 6 in. in length and 7 ft. in width. It weighs approximately 9,100 lbs. It is equipped with brakes and drawbar for hooking up with a 5-ton auto truck or tractor, and has a capacity of 10 tons. The towing speed is 10 miles per hour.

Before the highway trailer was received the road machinery and snow loaders were transported on low-ramp cars and the routes had to be confined to streets with car tracks. By using the trailer much unnecessary mileage and traffic congestion is avoided.



New Snow-Loader on New Trailer Being Handled by Truck

RESERVE FUND

July 1, 1924 $1,000,000

July	1924	**deficit**	**$353,245.79**
August	“	“	**445,820.47**
Sept.	“	“	**207,334.30**
Oct.	“	“	**36,155.55**
Nov.	“	surplus	15,031.47
Dec.	“	“	152,527.52
Jan.	1925	“	269,649.08
Feb.	“	“	118,183.05
March	“	“	211,955.71
April	“	“	130,636.68
May	“	“	139,081.44
June	“	**deficit**	**25,792.94**
Profit and **Loss**			$51,865.43

July 1, 1925 $1,000,000

July	1925	**deficit**	**$249,477.93**
August	“	“	**367,593.94**
Sept.	“	“	**176,763.97**

SEPTEMBER OPERATION

	1925	1924
Cost of service exceeded revenue	$176,763.97	$207,334.30
Ratio operating expense to operating revenue	76.39%	77.57%
Operating revenue per car mile operated	60.01c	58.76c
Operating revenue per car hour (A. E. R. A. standard)	$5.80	$5.57
Revenue passengers	27,791,882	29,765,633
Per cent. 5c and 6c passengers	16.90%	27.41%
Average fare per revenue passenger	9.306c	8.629c
Revenue passengers per car mile operated	6.335	6.692
Car miles operated:		
Rapid-transit lines	1,168,193	1,196,694
Surface, two-man	1,896,558	2,160,082
Surface, one-man	1,056,579	1,000,750
Motor bus	256,035	80,860
Express, newspaper and sprinkler cars	9,453	9,355
Total miles operated	4,386,818	4,447,741
Trips operated	571,618	574,090
Employes complained of by car riders	78	109
Complaints in regard to car service	8	11
Average number of witnesses per accident	3.76	3.27
D.C.K.W. hr. output gross for month	16,461,300	17,381,140
Maximum K. W. load	59,260	56,820
Tons of coal consumed	14,143	14,778
Lbs. of coal burned per D. C. K. W. hr. at cars	1.931	1.91
Revenue passengers carried per accident	17,930	19,032
Accidents per 10,000 car miles	3.53	3.51
Car defects reported per 10,000 car miles	4.8	6.7
Operating and maintenance cost of power, including depreciation:		
Per D.C.K.W. hr. for car service	1.11c	1.11c
Per revenue car mile	4.16c	4.17c
K. W. hr. per revenue car mile	3.663	3.672

October 21, 1925. EDWARD DANA, *General Manager.*

Vol. 4 NOVEMBER, 1925 No. 11

PUBLIC TRUSTEES
BOSTON ELEVATED RAILWAY

CO-OPERATION

SERVICE
FOR THE
SAFE CAR RIDERS SURE
SATISFACTORY

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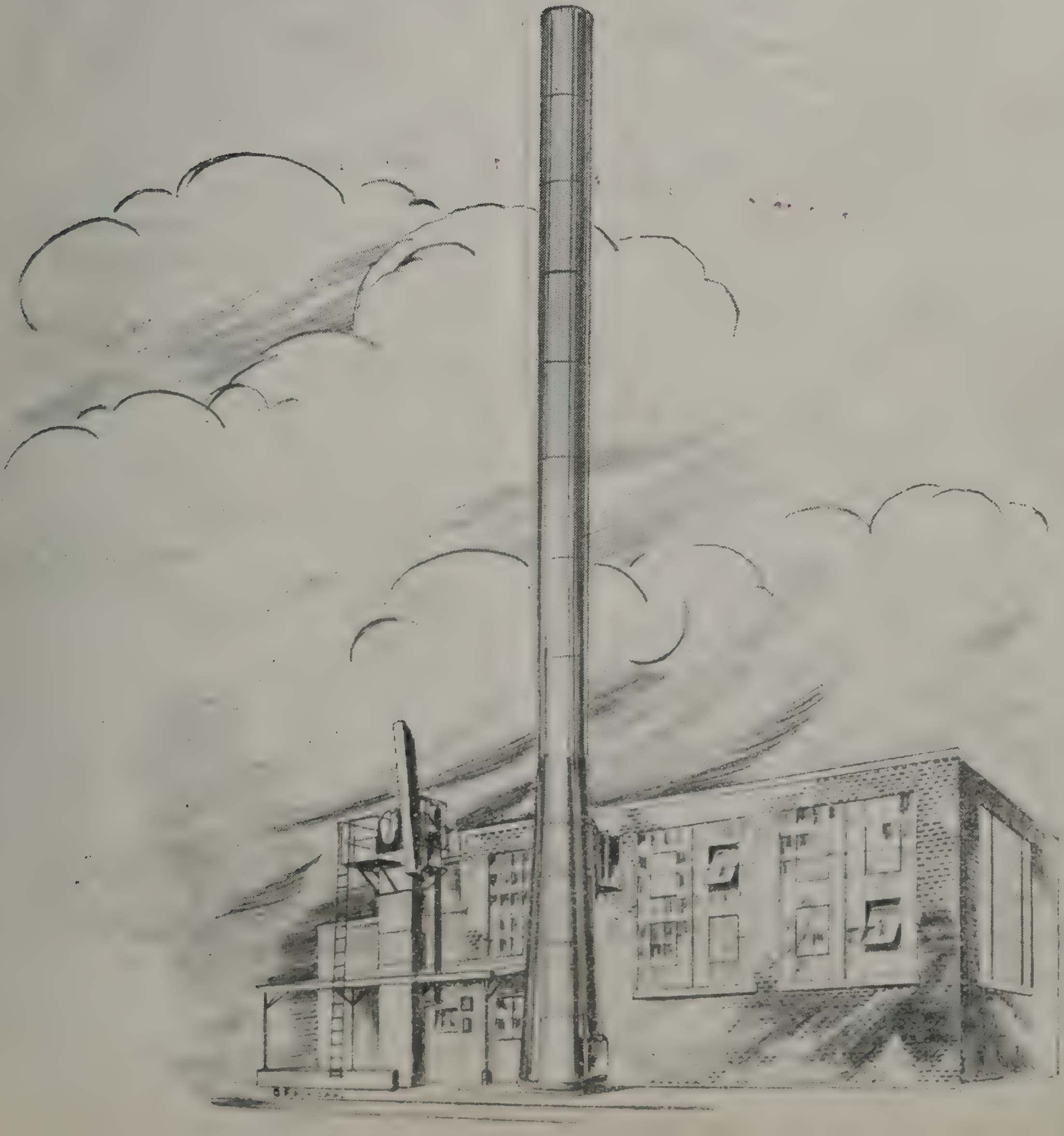

THIS MONTH'S FRONTISPIECE

On the first page of this issue appears the new central heating plant at Medford. It has capacity to handle the heating requirements of the present carhouse, the new garage and possible additions to either or both of these.

The heating plant comprises one 72-inch return-tubular boiler, with a large stack designed to furnish a perfect draft with a minimum production of smoke. The stack is 90 feet high, of heavy steel and built to be self-supporting; that is, it does not require the guys so commonly seen attached to steel stacks. The boiler is housed in a modern-type building with steel frame, brick and tile side-walls and a liberal allowance of steel, ventilated sash. This insures a bright interior with ample fresh air.

The high-pressure steam produced by the boiler is conveyed to the carhouse and garage by means of a well-insulated pipe carried overhead on poles across the yard. In each heated building is, or will be, a pressure return pump to force the condensed steam back to the boiler.

Coal and ashes are handled by mechanical conveying equipment, which minimizes the time required to unload coal from the service cars used for transportation, or to load ashes on these cars.

This plant was completed Oct. 1 and was placed in service after the necessary tests on Oct. 15. Its completion is a part of the program of improvement in economy and efficiency which is under way on the property. The economy in this case results from the fact that where several buildings at the same location require heat, a central heating plant proves more economical than separate plants. The saving is made in construction and equipment costs, in coal consumption and in operating costs.

Educational Work in the Electric Railway Industry*

If the electric railway industry is to perform its proper function of supplying the transportation that its patrons need, it must have a well-trained personnel. Obviously no system of general education will fit workers for the specific duties of electric railway employees. These employees must be trained on the job, and to insure the best results they should be trained systematically. Few electric railways as yet have a comprehensive educational program, but there is an increasing appreciation of the importance of doing so.

As introductory to some details regarding electric railway education, a few fundamentals may first be stated. First, it is not fair to educational institutions to expect them in general to prepare their students for specific jobs. Of course there are exceptions, like stenography and telegraphy, but most schooling is, and should be, of a more general character. Few young people, even in high school, know during their school days what employment they will enter later. Hence they should be taught those fundamental subjects that are needed in all lines of work—elementary mathematics; English, including literature, composition, grammar, rhetoric and possibly declamation, while not forgetting spelling; history and civics, and some rudiments of science. These are the subjects that can be learned most readily and can be most effectively taught in school. Of course, for the relatively few who are privileged to attend college, some specialization is necessary, but not with a directly vocational point of view.

The electric railway industry, like others, must take the product of the schools as its raw material. It must train its recruits to do properly the tasks for which they are best fitted. This means careful selection and assignment to work, and intelligent training for that work. The ideal electric railway organization would have, among its recognized departments, one for the selection, training, checking and adjustment of personnel of all other departments. Some progress has been made in the transportation department. This work needs much improvement, and the same idea should be generally employed.

But in its training work the electric railway should not try to duplicate general school work. It should utilize to the fullest extent the skill of professional teachers and the enormous investment of public funds and private means in educational institutions. It should do at least three things: (1) help the schools to do their work better, by showing interest and giving counsel when desired; (2) dovetail its own educational program in with that of the schools; and (3) assume full responsibility for training in subjects not properly within the scope of the school program.

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*Abstract of article by Edward Dana in the "Electric Journal," October, 1925, page 475.

In the past, the schools have tried to go too far into distinctly specialized vocational work. This was partly because industry was not doing its duty, but partly to render instruction "practical" and interesting. There is a decided reaction from this tendency. Excepting schools of the trade type, for which there is a real field if they really teach trades, the present-day school and college are returning to the "3 R's," using that symbol in its broad sense. In educational work the electric railways are making substantial progress. The educational work is not so highly organized as that of the light and power companies, and it is more or less tied in with the work of such companies. Many utilities are closely affiliated, and the railways are large customers of the power supply companies. The educational work of these utilities is, therefore, properly closely related. Thus it is natural that such companies as the Milwaukee Electric Railway & Light Company, the Insull interests, the Stone & Webster subsidiaries and the like, should be leaders in this field.

However, independent railways are actively at work also.

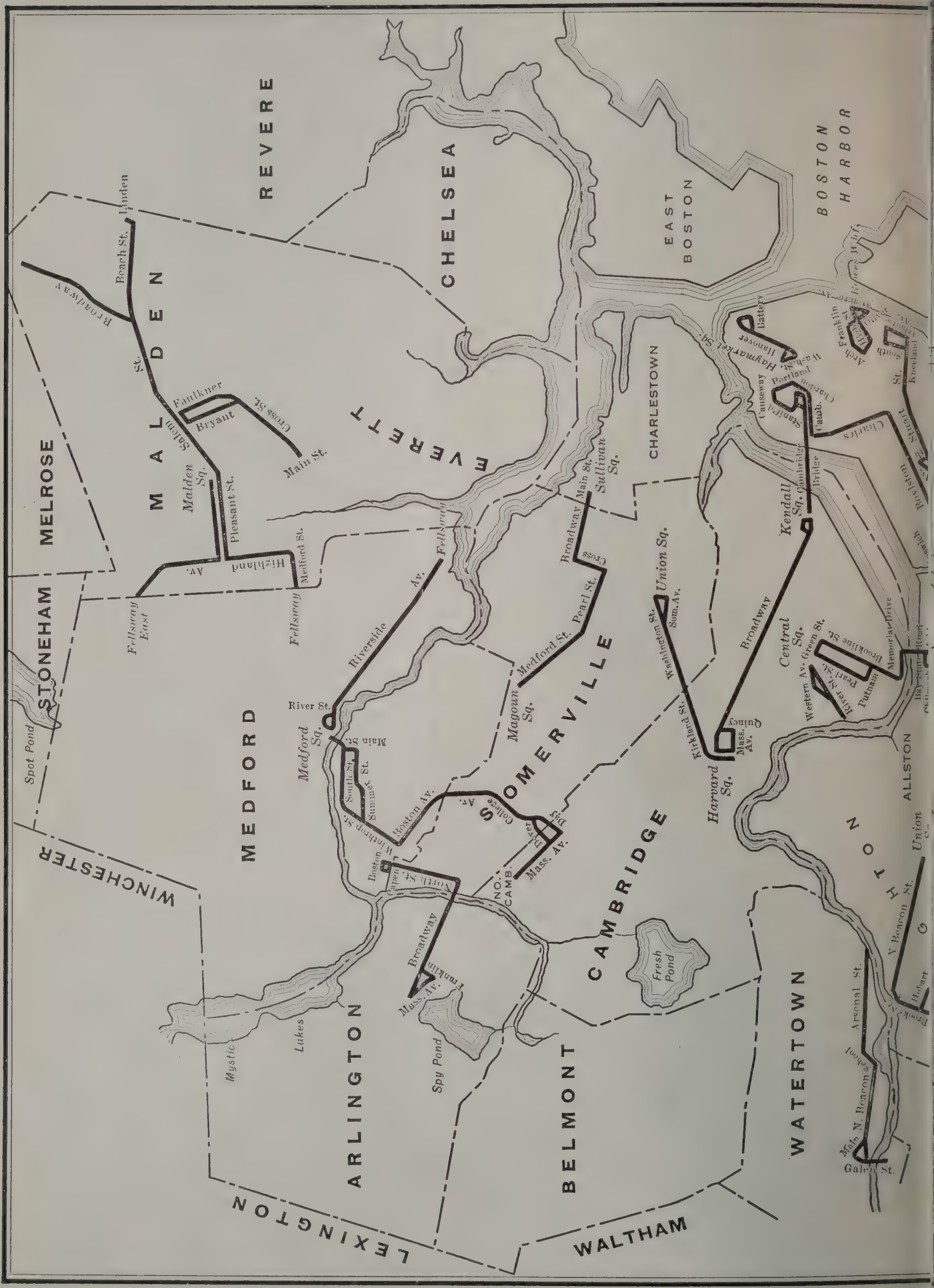
The 1925-'26 program on the Boston Elevated Railway property will not be elaborate, the aim being to put the educational work on a firm and permanent foundation. The group conferences were educational in a limited sense only; they involved the study only on the part of the speakers and group chairmen. After all, education is a process of self-improvement. It cannot be dispensed by agencies outside the individual himself. They can furnish the means and to some extent the incentive. He must do the work, just as he must digest his own food.

INFORMATION AND REPORT CLERKS

In Room 723 in the Park Square Building centers the 24-hour information and report service of the railway. Here there are on duty, in 8-hour shifts, three men, who are kept informed by telephone or otherwise of all occurrences of importance which take place on the system. These men are F. W. Hinds, E. S. Hopkins and F. L. Murray. In addition, F. I. Tukey acts as a relief.

These information and report clerks are familiar with all details of the railway. They answer inquiries by telephone or in person, and in case of accident or blockade it is their duty to assist in restoring service. In this they act in full co-operation with the responsible department heads and keep them fully informed in regard to all of the circumstances. An important part of their work is furnishing information regarding the service rendered on the different lines of the railway and on connecting lines, as well as the methods of handling special cars and special buses.

These Men Act as a Clearing House for Information Night and Day



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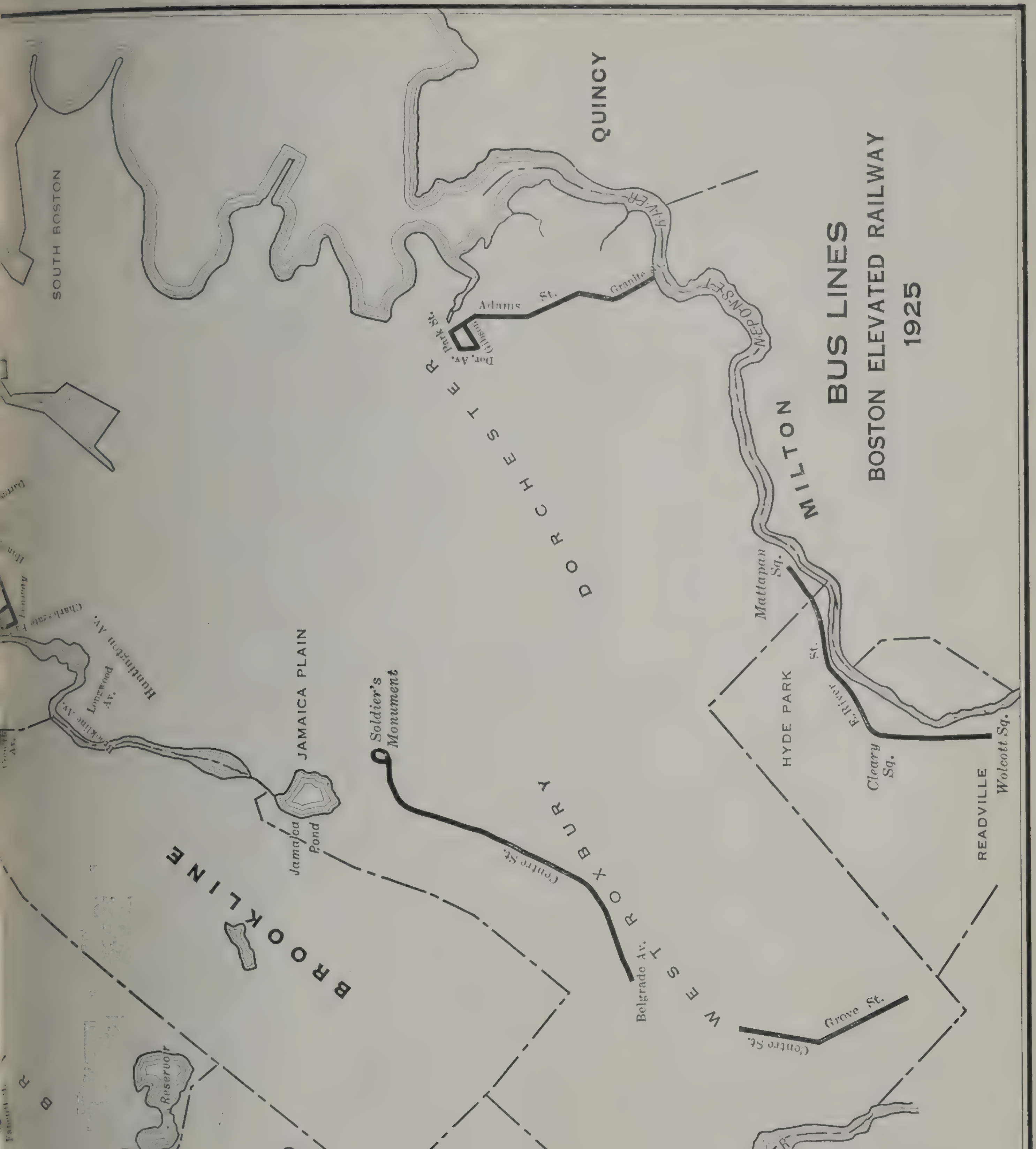

s map see the following page.

DATA OF BUS OPERATION, BOSTON ELEVATED RAILWAY

Route No.	Rd. trip Mileage	Route	Round trip running time	Trips Operated daily	Total miles operated daily
2500	2.74	Wolcott Sq.—Cleary Sq.	16	20½	56.17
2501	6.40	Wolcott Sq.—Mattapan Sq.	36	81½	521.60
2502	3.66	Cleary Sq.—Mattapan Sq.	20	5½	20.13
2403	1.16	Rowes Wharf—Summer & Arch Sts.	10	111	129.20
2505	1.25	Haymk't Sq.—Battery & Commercial Sts.	11	77	96.25
2506	5.23	Belgrade Ave. & Centre St.—Centre & Eliot Sts.	30	85	444.21
2510	4.67	Church St.—Centre & Eliot Sts.	28	7	32.69
2508	3.52	Park St.—Granite Bridge.	17	170	598.40
2509	2.22	Park St.—Pierce Ave.	12	39	86.38
2507	2.76	Copley Sq.—So. Sta.	15	81	223.15
2511	2.56	Centre & Spring Sts.—Grove and Washington Sts.	12	53	135.47
3400	3.75	Union Sq.—Allston—Brooks & Faneuil Sts.	18	115	431.14
3401	2.63	Green St.—Ashby & Commonwealth Ave.	16	179½	471.73
3402	1.96	Green St.--Granite and Brookline Sts.	10	51	99.91
3404	4.40	Harvard Sq.—Kendall Sq.	22	122	537.04
3406	1.39	River & Blackstone Sts.—Central Sq., Camb.	8	114	158.57
3408	4.15	Watert'n Sta.—School & Arsenal Sts.	20	114	472.64
3413	2.75	Harvard Sq.—Union Sq., Somerville.	12	42	115.71
3414	5.54	Fenway—North Station.	33	225	1,245.60
3415	2.41	Kendall Sq.—Bowdoin Sq.	17	176	424.86
4241	7.86	Fellsway & Medford St.—Broadway north.	40	91	715.26
4232	2.98	Medford Sq.—Fellsway.	16	86	256.45
4234	4.21	Magoun Sq.—Sullivan Sq. (lower level)	24	157½	663.23
4237	3.69	Cent. Sq. (Som.)—Sullivan Sq. (lower level)	16	34	125.49
4238	2.44	Faulkner—Cross and Main Sts.	12	128	312.58
4239	5.82	Medford Sq.—North Camb.	34	96	559.01
4240	2.95	Upper Highland Ave.--Malden Sq.	17	51	150.55
4242	7.79	Fellsway & Medford St.—Linden	40	88	685.78
4243	3.35	North St.—Arlington Centre	20	92	308.29
		Totals		2692½	10,077.49

Total number of routes............ 23
Total bus-route mileage...........43.65

BUS OPERATION BY THE ELEVATED

On Feb. 24, 1922, the first bus line was placed in operation on the Boston Elevated Railway between Union Square, Brighton, and the Boston-Watertown line on North Beacon Street. The use of this type of transportation, co-ordinated with the rest of the system, has increased from this modest beginning until at the present time there are twenty-three lines operating over 43 miles of route and involving 132 buses. We are operating annually at the rate of 3,250,000 revenue bus-miles and carrying at the rate of 21,000,000 passengers on buses.

The map on the center pages of this issue indicates the distribution of these auxiliary lines and shows those now in actual operation. Several others are in contemplation, although the growth is likely to be consistent and conservative.

The buses are operated from three rating stations; Arborway, Bennett Street and Salem Street. Garages have been provided at Arborway, Allston and Salem Street, and an additional garage is now contemplated in the vicinity of Union Square, Somerville.

This vehicle affords an opportunity to render service impossible to be rendered by cars because of the expense of laying rails. It also affords the opportunity to provide service where the rebuilding of the tracks would involve expense out of proportion to the volume of traffic.

While the motor bus has now become an integral part of the system, it cannot supersede main line street car routes. Anyone familiar with the two and three-car train operation on the main routes of this railway can readily see the reasons why smaller vehicles can not perform this character of heavy traffic duty. Our system has three different types of units in rapid-transit service: the large Cambridge subway cars, the elevated main-line cars, and East Boston Tunnel rapid-transit cars. It has various types and sizes of surface cars to meet its operating needs, and now has buses to meet the needs that they can satisfactorily serve.

The map was printed for the purpose of informing our organization of the extent to which the bus development has now gone and to picture the actual routes in operation.

CAR REPAIRS AT EVERETT

The following facts were recently compiled for the use of visitors to the Everett Shops. They are arranged in form convenient for reference.

When completed the shops will cover 489,375 sq. ft. of floor space. About one-quarter is now completed, comprising the wood and paint shops. All machine, truck and axle work is still being done at Albany Street and Sullivan Square, and stores are kept there also.

Assume that a carhouse foreman, with the approval of the district supervisor, is sending a car to the shops. He first fills out a card and attaches it to the car, stating in detail what is required to be done to it. He then requests and receives a crew to take the car to the shop.

WORK DONE IN THE WOOD SHOP

On arrival it is placed on a side track in the yard where it awaits inspection. The repairs required are apt to be more than reported, because rotted sills and posts cannot be seen until some of the sheathing is stripped off. Cars may be held in the yard for various reasons; e. g., cars needing minor repairs may be put through ahead to keep the paint shop busy. Maybe the repairs are found to require the ordering of special material. In some cases the condition of the car is so bad that the question of scrapping must be referred to the management for decision. If a division is suffering from an unusual number of collisions, reducing cars in service below a safe minimum, then special efforts are made to push sufficient cars through to meet its needs.

When a berth becomes vacant in the shop, the next car scheduled for repairs is transferred from the yard to this berth, and a crew of men is assigned to it.

In general, the car is first stripped. All window screens are removed, and sent first to the machine shop for repair, then to the paint shop for cleaning and dipping. Sash and doors are removed and sent to the sash-and-door department. The door-operating mechanism is taken down and overhauled. Seat cushions and backs are all put into good condition, and sent to the paint shop for cleaning and repainting. The seat frames gone over, all hardware being removed and sent to the brass room for cleaning, repolishing and lacquering. The car is then ready for reair.

If the body is old and suspected of having rotted framing, it is further stripped of outside sheathing and possibly the floor is removed. The process of rebuilding then begins. Rotted portions, such as posts and framing, are removed and sent to the mill for duplication. Machines permit the doing of this work better than it can be done on the job. Corroded or bent sheathing plates are sent to the sheet-metal department for straightening or duplication. Heavier metal work and framing goes to the machine and blacksmith shops for the same purposes.

Gradually the framing is restored to its original condition and is then resheathed. The floor is re-laid, doors and windows are replaced and the car is sent to the paint shop for painting. The final trimming is not done until the car is practically ready to be returned to the carhouse. It goes back there trimmed and cleaned.

The material used in a year at Everett in this work is approximately as follows: lumber of all descriptions, about 600,000 ft., consisting of mahogany, cherry, ash, oak, pine, whitewood, maple and spruce; sheet metal, 150,000 lbs.; structural steel, bars and other heavier forms of metal, 130,000 lbs.; brass, 1,800 lbs.; screws of every kind, 1,000,000; bolts, 700,000; canvas, 225,000 sq. ft.; leather, 1,000 sq. ft.; glass, 150,000 lights.

A visitor to Everett will be interested in the following among other things that he will see in and near the wood shop. First, there is the storage track, where cars are placed when sent to the shops for repair. Outside is the outdoor lumber storage. Here is the dry kiln, through which practically all lumber passes and in which green lumber can be kiln-dried in 48 hours. Near by is the baling press, in which shavings are made up into bales weighing about 80 lbs. each.

The wood shop is provided with a system for effectively freeing the air of dust.

Over the storeroom in the wood shop is the sash-and-door department, which turns out 5,500 doors and sash annually.

The paint-shop work will be discussed in a later issue.

RESERVE FUND

July 1, 1924, $1,000,000

July	1924	**deficit**	**$353,245.79**
August	"	"	**445,820.47**
Sept.	"	"	**207,334.30**
Oct.	"	"	**36,155.55**
Nov.	"	surplus	15,031.47
Dec.	"	"	152,527.52
Jan.	1925	"	269,649.08
Feb.	"	"	118,183.05
March	"	"	211,955.71
April	"	"	130,636.68
May	"	"	139,081.44
June	"	**deficit**	**25,792.94**
Profit and Loss			$51,865.43

July 1, 1925, $1,000,000

July	1925	**deficit**	**$249,477.93**
August	"	"	**367,593.94**
Sept.	"	"	**176,763.97**
Oct.	"	surplus	117,703.96

OCTOBER OPERATION

	1925	1924
Revenue exceeded cost of service	$117,703.96	
Cost of service exceeded revenue		$36,155.55
Ratio operating expense to operating revenue	70.09%	74.66%
Operating revenue per car mile operated	64.19c	61.36c
Operating revenue per car hour (A. E. R. A. standard)	$6.16	$5.85
Revenue passengers	31,890,185	32,846,982
Per cent. 5c and 6c passengers	17.42%	27.55%
Average fare per revenue passenger	9.279c	8.622c
Revenue passengers per car mile operated	6.786	6.988
Car miles operated:		
Rapid-transit lines	1,280,298	1,303,647
Surface, two-man	2,021,196	2,262,251
Surface, one-man	1,118,872	1,035,111
Motor bus	270,511	88,849
Express, newspaper and sprinkler cars	8,297	10,442
Total miles operated	4,699,174	4,700,300
Trips operated	610,652	600,325
Employes complained of by car riders	116	112
Complaints in regard to car service	22	16
Average number of witnesses per accident	2.97	3.78
D.C.K.W. hr. output gross for month	19,129,435	19,039,835
Maximum K. W. load	69,060	63,000
Tons of coal consumed	16,825	16,983
Lbs. of coal burned per D. C. K. W. hr. at cars	1.976	2.004
Revenue passengers carried per accident	30,811	33,898
Accidents per 10,000 car miles	2.22	2.06
Car defects reported per 10,000 car miles	4.5	7.0
Operating and maintenance cost of power, including depreciation:		
Per D.C.K.W. hr. for car service	1.05c	1.16c
Per revenue car mile	4.19c	4.43c
K. W. hr. per revenue car mile	3.663	3.672

November 24, 1925.

EDWARD DANA, *General Manager.*

Vol. 4 DECEMBER, 1925 No. 12

10/8

PUBLIC TRUSTEES

BOSTON ELEVATED RAILWAY

CO-OPERATION

SERVICE
FOR THE
SAFE CAR RIDERS SURE
SATISFACTORY

x9338.744aa5

THIS MONTH'S FRONTISPIECE

The type shown on the cover of this issue is one of seventeen steel dump-cars used by the maintenance department for handling construction materials in the rebuilding of surface car tracks, also in handling ashes from power stations.

A few of the older cars are dumped by hand; the newer cars are dumped by motor, and the dumping mechanism is so arranged that the car body moves sideways a predetermined distance before the load is dumped, so that the material is dumped clear of the track. The operation of dumping requires about one minute.

Previous to the adoption of mechanical snow loaders and motor trucks for disposal of snow, these dump cars were used extensively for snow removal. The snow was loaded into the cars by hand shoveling, or by use of a crane car equipped with a clamshell bucket, and taken to the nearest tidewater dump, of which the photograph shows one of these dumps, at the Dover Street Bridge.

SOME FACTS ABOUT PUBLIC UTILITIES*

The first gas company in the United States with a record of continuous operation was a Boston company. It furnished gas in 1822. New York had the first street cars, in 1832. They were, of course, horse cars. Boston had none until 1856, but it had electric cars in 1889, only a year after their first successful use on a large scale, in Richmond. According to a recent estimate it would require 167,000 horses to handle the passengers who now ride in the Boston district.

The electric light industry practically began with a central station built in New York City in 1882, and Boston followed three years later.

The first telephone exchange was installed in 1876, and in Boston. It was Boston that furnished the money, foresight and courage to develop the great industry which now provides a telephone for every eight people in the country. The United States has 6 per cent. of the world's population and 68 per cent. of its telephones.

SAFETY WORK

"Crippled Lives" is the title of a motion-picture film produced by the National Motion Picture Bureau under the supervision of the general manager of the railway. It is the railway's contribution to the nation-wide campaign, urged by President Coolidge, for the prevention of accidents. The mission of the film is to enlist the co-operation of all users of the highways in an effort to lessen the number of "preventable" accidents.

We keep constantly before our employees a realization of their responsibility in the prevention of accidents, their need of thoughtfulness and careful operation, and equip our cars and buses with every known practical safety device.

If maximum results are to be obtained other users of the highways must also realize their responsibility in the prevention of accidents; they must think not only of their own safety but the safety of others. The co-operation of all is necessary to lessen the toll of human lives and suffering.

This film is being shown in representative theatres in cities and towns served by the Boston Elevated Railway. Employees are urged to see it and to tell their friends about it.

THE GYPSY GIRL

On Jan. 19 and 20 a musical comedy with the above title will be given in Symphony Hall by members of the Boston Elevated Musical Club. Tickets are on sale by members of the cast and the committee.

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*Abstracted from lecture by L. R. Nash.

PRELIMINARY NOTICE TO EMPLOYEES CONCERNED

To car and train service men:

Be careful of your **ACCIDENT RECORD** beginning Jan. 1, 1926.

During January the management will announce a plan in its effort to reduce accidents which should appeal to every car and train service man in the employ of the railway and one of the **very important** features in the plan will be the **ACCIDENT RECORD** of the individual car or train service man, beginning Jan. 1 and ending July 1, 1926.

WATCH OUT FOR THE ANNOUNCEMENT!

Meantime, look out for your **ACCIDENT RECORD!**

FACTS REGARDING THE DORCHESTER EXTENSION

The cut below shows the portal and part of the incline at the first section of the new Dorchester rapid-transit extension, which begins at the Andrew Square station of the Boston Elevated Railway.

At the beginning of the extension, just south of the above mentioned station, it was found necessary to remove the concrete bulkhead wall and about 120 ft. in length of the walls and roof of the old tunnel.

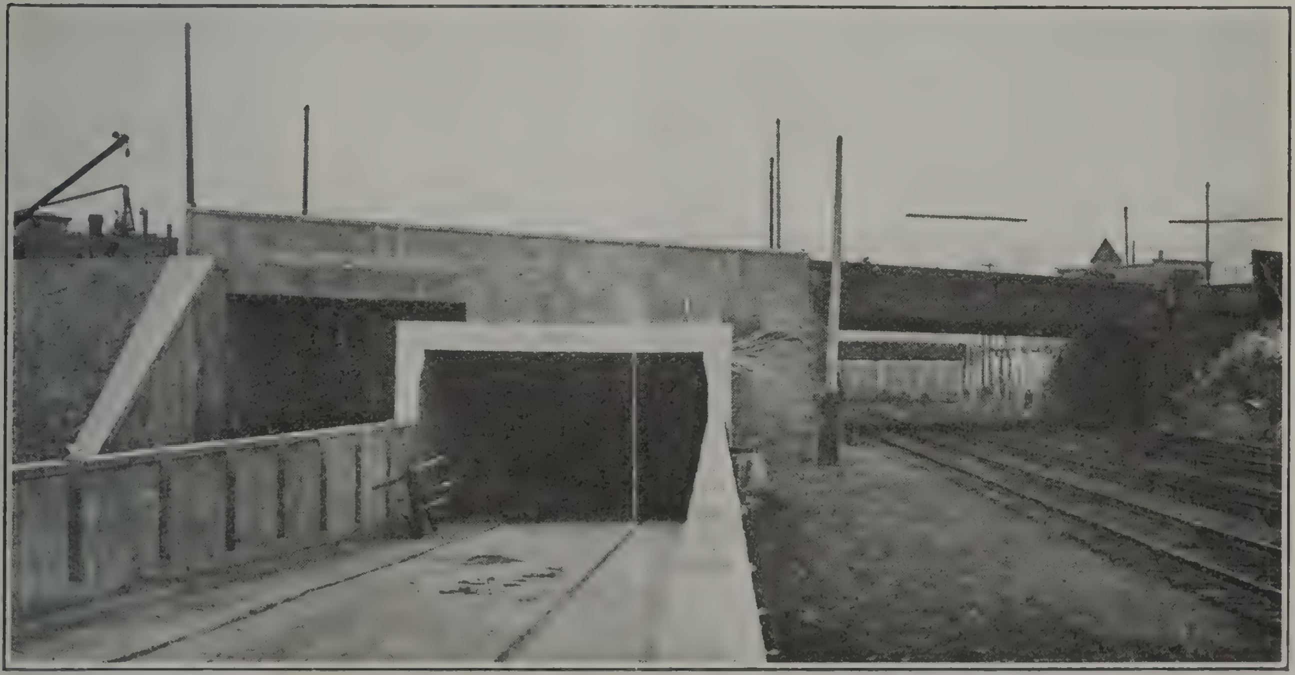
Starting from this junction point with the old tunnel, the line of the extension passes on a curve up the easterly side of Boston Street, continuing on under the four tracks of the Plymouth Division of the New Haven Railroad almost to Dorchester Avenue bridge, from which point it parallels the steam tracks. At Dorchester Avenue a new bridge was built, connecting with the old one, to accommodate the new tunnel and freight siding of the steam road, the opening at the left in the picture showing the location of the latter.

The incline is 766 ft. long, 468 ft. of which is in the tunnel, and all built on a 3 per cent. grade. The entire length of this section is nearly 1300 ft. Work upon it was commenced in December, 1924.

The building of this section represents the first step in the installation of rapid-transit service to the territory lying to the south of Andrew Square and now served by surface cars.

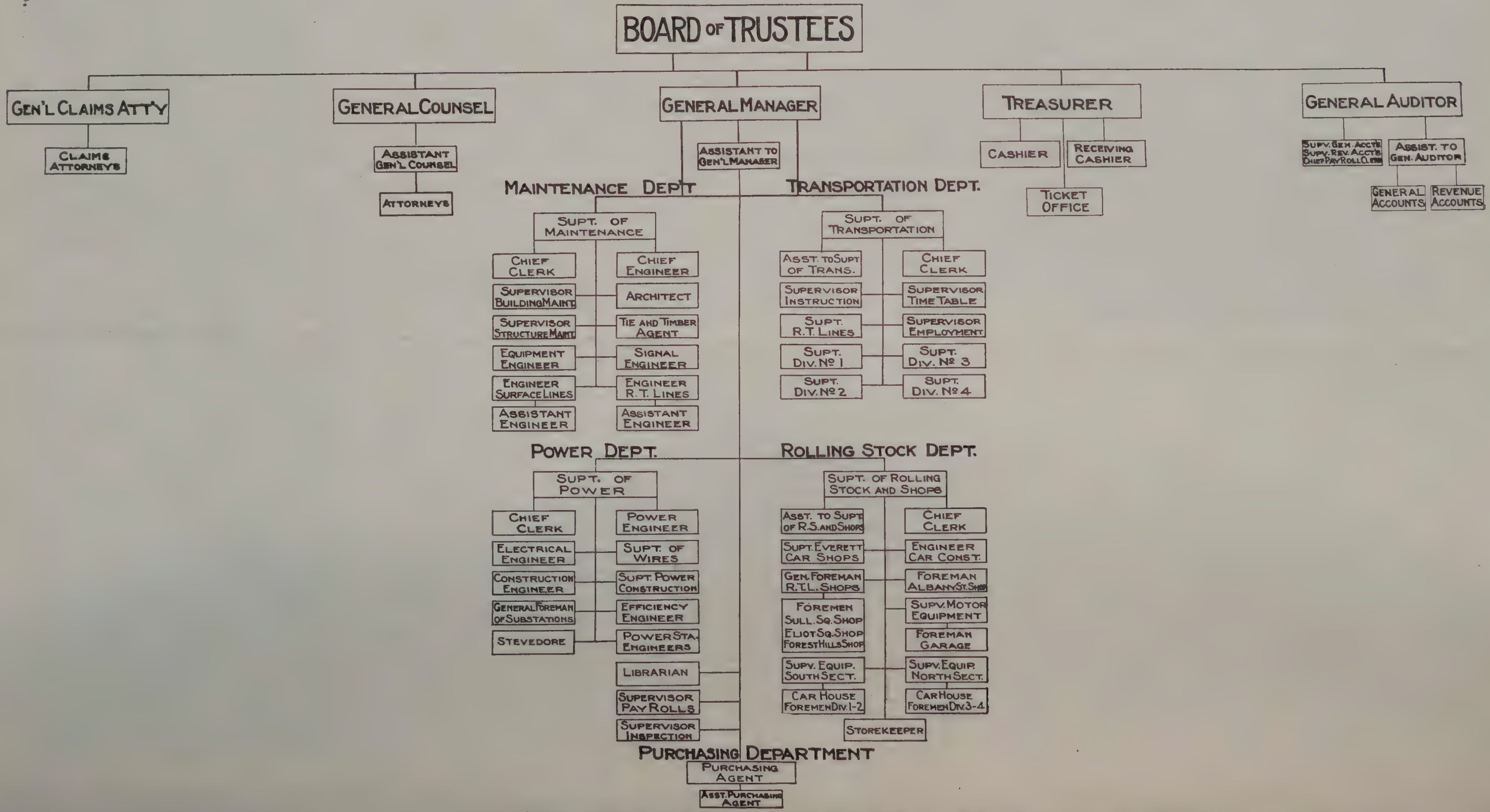
The next section south, beginning at the top end of the incline, is in process of construction, and it is hoped that rapid-transit service can be furnished to the new Fields Corner station within three years, with intermediate stations to be located at Columbia Road and Savin Hill.

This work was authorized by the Massachusetts Legislature, as shown in Sect. 4, Chap. 480, Acts of 1923.



This Incline Is Part of the New Dorchester Rapid-Transit Extension

BOSTON ELEVATED RAILWAY GENERAL ORGANIZATION



(Explanatory notes are given on the next page.)

WHAT THE GENERAL ORGANIZATION CHART SHOWS

In connection with his lecture in the course, "Transportation Problems as a Whole," D. D. Hall, assistant superintendent Rapid Transit Lines, used organization charts to show how the several departments of the railway are interrelated. One of these charts covered the general organization, and it has been reproduced this month to permit employees to obtain a bird's-eye view of our entire organization. It will be noted that there are five departments reporting to the Board of Trustees, of which two have to do respectively with legal matters and claims, and the other two respectively with money and accounts. The general manager has charge of the operating organization, which is subdivided into five departments, maintenance, transportation, power, rolling stock and purchasing. The operating departments are sub-divided in various ways to meet their respective needs. Extra copies of this organization chart can be procured at the general manager's office.

BURNING LOW-VOLATILE BITUMINOUS COAL

The committee appointed by the New England governors to study the local fuel situation has issued an important report. From the part relating to burning bituminous coal these extracts were made:

(1) Start fire similar to domestic anthracite, using lumps. After small starting fire is thoroughly ignited, continue to add coal until there is a good body of fire on grates. Before adding fresh fuel, push some of burning coal to back or side of fire pot nearest smoke pipe vent. Do not completely cover fire with new coal. Build a bed of fire 10 to 14 in. deep.

(2) Large lumps should be broken before firing, as lumps about the size of the fist give best results.

(3) When starting fire all drafts should be open, with check draft closed.

(4) Study carefully the proper adjustment of the chimney, ash pit and feed door dampers. Usually it will be found that:

(a) When firing fresh fuel the smoke pipe damper must be left open; check draft damper closed; feed door damper open; and ash pit door and damper closed.

(b) The ash pit damper should be opened after firing to start up fire, open slightly during the day, and shut at night or when firing fresh fuel.

(c) When fire is well started, ash pit damper should be adjusted, chimney damper nearly closed and check draft damper opened to an amount determined by experience.

(d) Adjust feed door damper after fire is burning well as found best by experience.

(5) Preliminary to firing a heavy charge of fresh coal adjust drafts to get good kindling fire, break up coke that may have formed on surface of fire with poker. Push part of burning coal to that part of fire box nearest vent to smoke pipe. Do not cover entire bed of burning fuel with fresh coal as pilot flame should be kept visible to ignite gases given off by burning fuel.

(6) Fine coal should be used on top of fire. This coal is very valuable for banking purposes.

(7) Shake grates seldom and stop as soon as light appears at bottom.

(8) Do not allow ashes to accumulate in ash pit. A partly filled ash pit interferes with proper draft and destroys grates.

(9) To avoid coal dust bituminous coal should be well wet down before being put into the cellar. The front of the pile should be kept moist by an occasional sprinkling of water. Damp coal prevents excessive gas and smoke when firing.

(10) The same general combustion rules apply to the use of commercial run-of-mine size of low-volatile bituminous coal. Using fine coal alone, build up a fire by adding not more than three inches of fresh fuel at a time, until fuel bed about 10 inches thick has been obtained; then fire a larger charge to hold the fire for a long period. Always leave some red coals exposed to ignite valuable gases given off from fresh coal.

RECORD EARNINGS ON DEC. 24

The passenger earnings of the railway for Dec. 24, 1925, were the largest in the history of the company, $127,264.45. Other big days were Dec. 20, 1924 ($126,558.44); Dec. 19, 1925 ($125,469.62); Dec. 24, 1924 ($124,774.69); Dec. 23, 1922 ($124,718.01); Dec. 12, 1925 ($124,232.23). On Sept. 20, 1919, the earnings passed the $100,000 mark with $102,649.64.

BOWLING SCORES TO DATE

Boston Elevated

	Won	Lost	Pins
Division 1	37	11	16711
R. S. & S.	36	12	17195
Repairmen	36	12	16699
Rapid Transit	32	16	17112
Division 2	31	17	16696
Steel Construction	31	17	16517
Power	28	20	16421
Instruction	28	20	16028
Division 3	25	23	16248
Auditors	24	24	16505
Receiving	18	30	15930
Employment	18	30	15900
George Street	18	30	14464
Division 4	9	39	15453
South Boston Power	7	41	15218
Claim	6	42	14917

Boston Elevated R. T. L.

	Won	Lost	Pins
Newman	24	12	11261
Sprague	21	15	11477
Butler	19	17	11421
Black	19	17	11391
Slawson	19	17	11089
Thomas	17	19	11245
Corliss	16	20	11220
Kivell	16	20	11039
Young	15	21	11157
Perron	14	22	11188

Corporation League

	Won	Lost	Pins
B. E. R. R. Co.	29	7	13232
Queen Quality	27	9	13237
Edison	25	11	13251
Telephone	25	11	12851
Hood	24	12	13045
N. E. Electro	16	20	13525
U. S. Rubber	14	22	12017
Salada Tea	13	23	12044
Converse Rubber	11	25	12248

PAINT SHOP PROCEDURE AT EVERETT

In the November "Co-operation" some facts useful to visitors were given regarding the carpenter shop at Everett. The following notes regarding the work in the paint shop were prepared for the same purpose. It is suggested that all Boston Elevated employees familiarize themselves with the figures given in these two articles in order that they may be able intelligently to answer questions regarding our wonderful new shops.

In the paint shop a car is first cleaned thoroughly, then scraped and sandpapered. If the old paint is blistered or unfit to be covered with new paint, it is all removed down to the bare metal or wood, and thoroughly washed. All bar metal or new work is thoroughly primed, after which holes and dented spots are puttied. Putty to the amount of 6,000 lbs. is used in a year.

The roof is next painted. Then comes the application of the main body or undercoat; very important at present as the former green color must be "killed" to give place to the orange color which is now standard. The enamel coat is next put on, after which necessary lettering is done. When possible a varnish coat is used also.

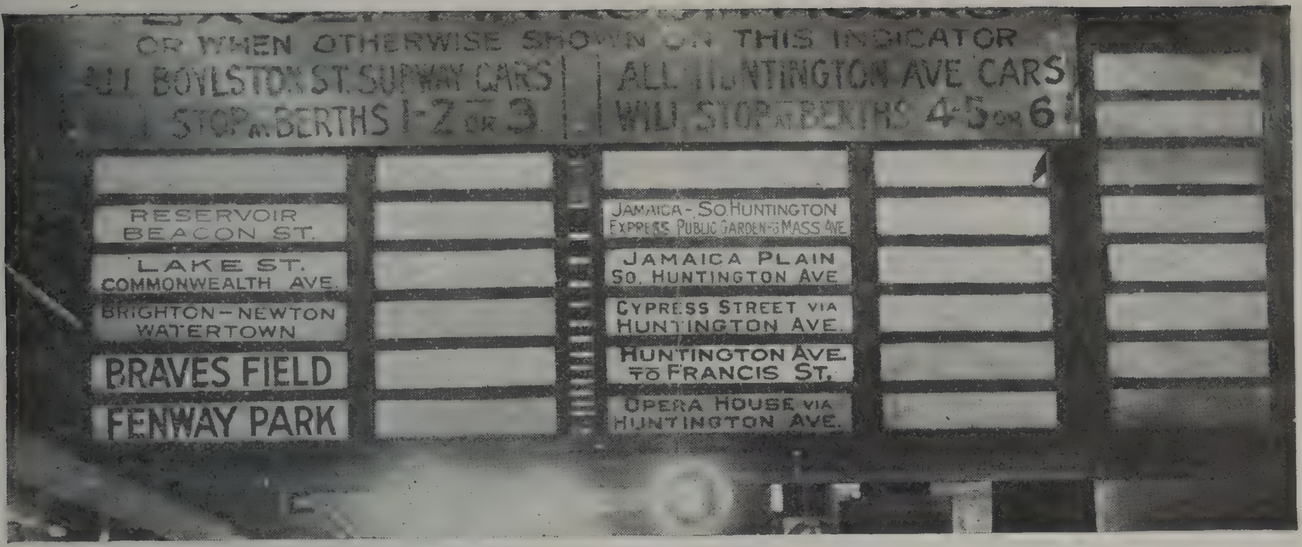
While the outside of the car is being repainted, the inside is being done over. In general, the only paint used is on sash, door and headlining, the other work being varnished.

Some of the quantities of materials used in the paint shop annually are as follows: turpentine, 3,500 gals.; alcohol, 4,269 gals.; enamel color, 2,135 gals.; varnish, 2,200 gals.; white lead 128,016 lbs.; red lead, 10,000 lbs.; colors, dry, in oil and in Japan, 20,000 lbs.; pumice for cleaning purposes, 7,000 lbs. The power and maintenance departments are also furnished with 3,500 gals. of paint each year.

INDICATOR AT PARK STREET

In the last twenty-five years many changes have taken place in local street railway operation. New types of cars have been added, new methods of fare collection installed, new subways built, etc. But one thing that has stood the assault of time is the indicator at Park Street subway station, by which passengers for several lines of surface cars are notified of the berths at which their cars will stop. Notice is given sufficiently in advance of car arrival that passengers may be ready to board as soon as the car doors are opened.

The station platform is divided into berths numbered 1 to 8, and the several lines of cars are shown on the indicator by fixed signs opposite which blank spaces are provided. These blank spaces contain eight sub-divisions, numbered 1 to 8 respectively, each sub-division containing a small electric-light bulb so arranged that any given number can be illuminated. This is done by an indicator operator, stationed in a small tower within the loop, where he has a commanding view of the entire station, and


OR WHEN OTHERWISE SHOWN ON THIS INDICATOR
ALL BOYLSTON ST. SUBWAY CARS STOP AT BERTHS 1-2 OR 3
ALL HUNTINGTON AVE CARS WILL STOP AT BERTHS 4-5 OR 6
RESERVOIR BEACON ST.
LAKE ST. COMMONWEALTH AVE.
BRIGHTON–NEWTON WATERTOWN
BRAVES FIELD
FENWAY PARK
JAMAICA–SO HUNTINGTON EXPRESS PUBLIC GARDEN–& MASS AVE
JAMAICA PLAIN SO. HUNTINGTON AVE
CYPRESS STREET VIA HUNTINGTON AVE.
HUNTINGTON AVE. TO FRANCIS ST.
OPERA HOUSE VIA HUNTINGTON AVE.

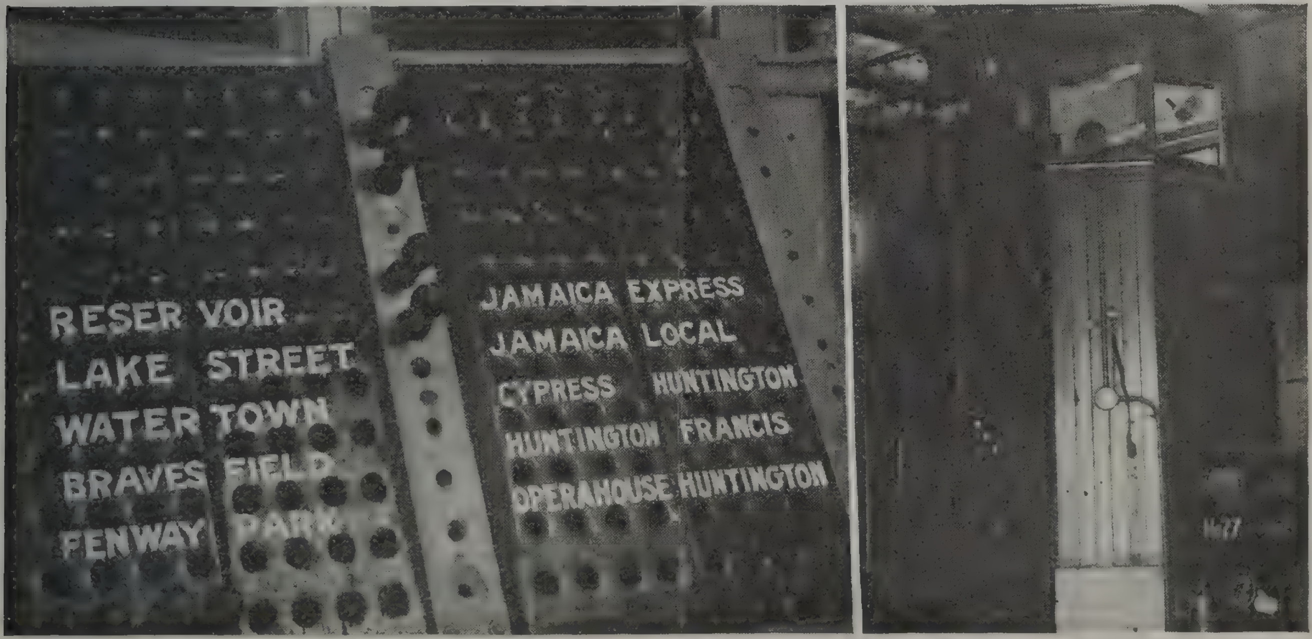
Berth indicator for cars at Park Street Station.

can see the approach of cars on the northbound side.

A small plug switchboard, somewhat resembling a telephone switchboard, is used for operating the indicator. For this purpose cordless plugs are inserted in the proper sockets. When the operator determines the berth at which the next car will stop, he indicates this on the indicator when the car comes around the loop. The motorman and passengers are thus guided to the proper stopping point.

On the indicator the lines routed via Boylston Street subway are arranged in one group, and those routed via Huntington Avenue in another. Since the removal of the Ipswich Street lines from the subway, all lines using the inner loop at Park Street divide between these two classes.

Further to help passengers, prevent confusion and do away with unnecessary walking on the platform the berthing was recently so arranged that, during the normal hours when station room permits of separation, the cars running via Boylston Street subway stop at berths 1, 2 and 3, and the cars running via Huntington Avenue stop at berths 4, 5 and 6. Thus all passengers for Boylston Street lines congregate at the southerly end of the platform, while those for Huntington Avenue and the several Tremont Street lines use the other end.



At left, plug board for operation of indicator. At right, tower for indicator operator.

RESERVE FUND

July 1, 1924, $1,000,000

July	1924	**deficit**	$353,245.79
August	"	"	445,820.47
Sept.	"	"	207,334.30
Oct.	"	"	36,155.55
Nov.	"	surplus	15,031.47
Dec.	"	"	152,527.52
Jan.	1925	"	269,649.08
Feb.	"	"	118,183.05
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June	"	**deficit**	25,792.94
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July 1, 1925, $1,000,000

July	1925	**deficit**	$249,477.93
August	"	"	367,593.94
Sept.	"	"	176,763.97
Oct.	"	surplus	117,703.96
Nov.	"	"	45,265.00

NOVEMBER OPERATION

	1925	1924
Revenue exceeded cost of service	$45,265.00	$15,031.47
Ratio operating expense to operating revenue	70.98%	71.74%
Operating revenue per car mile operated	63.69c	62.41c
Operating revenue per car hour (A. E. R. A. standard)	$6.11	$5.95
Revenue passengers	30,898,140	30,733,603
Per cent. 5c and 6c passengers	17.62%	20.35%
Average fare per revenue passenger	9.272c	9.117c
Revenue passengers per car mile operated	6.732	6.724
Car miles operated:		
Rapid-transit lines	1,214,387	1,252,157
Surface, two-man	1,990,958	2,193,860
Surface, one-man	1,112,001	996,433
Motor bus	265,734	119,333
Express, newspaper and sprinkler cars	6,773	8,881
Total miles operated	4,589,853	4,570,664
Trips operated	594,849	579,028
Employes complained of by car riders	83	118
Complaints in regard to car service	19	15
Average number of witnesses per accident	3.51	3.81
D.C.K.W. hr. output gross for month	21,992,940	21,622,780
Maximum K. W. load	79,860	81,230
Tons of coal consumed	19,257	19,760
Lbs. of coal burned per D. C. K. W. hr. at cars	1.966	2.053
Revenue passengers carried per accident	31,561	33,632
Accidents per 10,000 car miles	2.11	2.00
Car defects reported per 10,000 car miles	4.7	7.2
Operating and maintenance cost of power, including depreciation:		
Per D.C.K.W. hr. for car service	0.97c	1.05c
Per revenue car mile	4.61c	4.76c
K. W. hr. per revenue car mile	4.741	4.548

December 22, 1925.

EDWARD DANA, *General Manager.*

BOSTON ELEVATED RAILWAY

CO-OPERATION

Volume 5 JANUARY, 1926 Number 1

[illegible]

1926 on the Boston Elevated Railway

Each year our organization meets its problems and accepts its responsibilities with vigor. The year 1926 challenges us to greater achievement than we have as yet been able to reach.

COURTESY should have our attention throughout the course of the year. Be courteous under all circumstances, at all times, with the patrons and fellow employees.

SAFETY. We made great strides in 1925. Let us make the accident record this year the best this railroad ever experienced. Keep safety in mind each day.

WASTE falls on the shoulders of the car riders. Be careful in the use of materials, supplies and tools used in daily work. We have no right to add a single item of waste, in time or material, to be borne by the users of the system.

TEAMWORK is the goal of every successful organization. Work with your fellow employees to produce a finished product—the result of excellent teamwork.

Look forward to the days of 1926 with enthusiasm and with a firm conviction of the importance of the industry with which you are associated, and determine that its record shall be a creditable one.

PUBLIC RELATIONS*

By Edward Dana

Public relations form one of the most important aspects of the electric railway industry, in fact, of all utilities furnishing service rather than commodities.

In the good old days of the horse car, little was heard of public relations, and for two reasons: First, there was greater opportunity for personal contact between the car rider and the employees, because business was transacted in a more leisurely manner. Second, the horse railway was such an improvement over its predecessors that the public looked forward to it with anticipation. Promoters were also looking forward to the improved service which was to be rendered to the public. These conditions of themselves created good salesmanship. Both public and promoters were keen for the success of the new service.

As the street railway business developed there came a period of rapid expansion in which many things injurious to the industry were done. I may call this period the "middle ages" of the industry. Fortunately this day has passed and the street railway is trying to rebuild the reputation which it had when it was an infant industry. Nowadays we hear a great deal about salesmanship and good public relations. These terms were designed to neutralize the stereotyped impressions which existed in the minds of the public and carried over from the "middle ages."

The following excerpts from our rule book of 1886 show the spirit of the early days:

> From Rule 6. "It is as much the driver's duty as the conductor's to look for passengers, and when the conductor is collecting fares the driver must use extra diligence and not miss a passenger."
>
> From Rule 19. "They (conductors and drivers) should be attentive to duty, carefully observing every person as they proceed along the streets, and if they notice any one standing looking at the car undecided whether or not to ride, make a motion with your hand to attract their attention, which would many times induce them to ride and thereby increase the receipts of the car and the business of the company, the receipts showing that both conductor and driver have been alive to their duty. You must occupy your time on the rear platform looking out vigilantly in all directions for passengers. You will stand with your back to the car when leaving starting points and be constantly on the lookout for all who wish to ride."

These rules show both good salesmanship and good public relations. They would not apply to our present problem, however, because we have a different public; our public moves faster and in greater masses. The question before us is: "How can we secure good public relations and what means have we at our disposal to secure them?" Well, to begin with, we can not hope for good public relations unless we have an inspired personnel. Rules will not make good public relations; if we do not have pride in our industry we can not hope for them.

Then there is the opportunity for courtesy, such as is illustrated in our lost-and-found department. The safety movement, also, offers excellent opportunities for contact with the public as a whole.

Further it builds good public relations to meet small problems properly in connection with our stations and waiting-rooms, removing possible sources of irritation of passengers. The trustees recently authorized the installation of a clock and a waiting booth at Massachusetts Avenue station because a considerable number of patrons desired them. Possibly they were really not needed, but such actions are indirectly profitable.

Public relations also involve contact with the press. The trustees do not print paid advertisements like privately operated companies, but they have a policy of frankness in their relations with the press.

The radio and motion pictures are also telling the railway story to the public. For example, "Boston in Motion" was designed to show some of the problems that are back of many unsatisfactory public relations. "Crippled Lives" was put on as a contribution to the accident-prevention campaign.

Good public relations are also fostered by forethought regarding improvements in service; by the making of practicable improvements before public attention is called to their need. Then when unexpected conditions arise it helps to explain to the public that everything possible is being done to meet emergencies. We can show that when we have a difficult situation to contend with we are trying our best to improve conditions.

An example of what I have pointed out is given by a recent derailment at Kenmore Station, due to a broken rail. Almost instantly cars were diverted over Harvard Bridge and Beacon Street, and shuttle-car service was started between the Packard agency and St. Mary's Street. I happened to be on the spot soon after the accident and noticed some empty buses of the Cottage Farm line standing waiting, and I asked the operators to swing around and help out in the emergency. I also called into service two new White buses which happened to be going by. This emergency use of the buses was greatly appreciated and was undoubtedly a contribution to our good public relations. A complication arose here due to a double collection of fares on the Kenmore trains. As a further contribution to good public relations we notified the public that refunds would be made in all such cases upon request.

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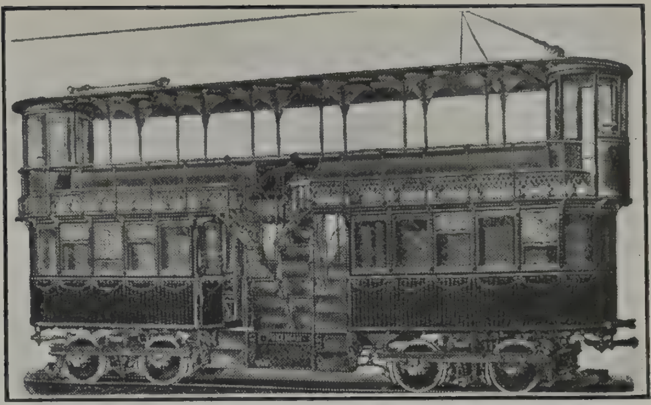
*Abstract of address before employees of transportation department, Dec. 11, 1925.

Recently a newspaper article appeared on the electrification of the Lexington Branch of the Boston & Maine Railroad and the desirability of the Elevated giving rapid-transit service over it. A newspaper reporter asked us these questions: "Have the trustees considered electrification and operation of rapid-transit trains on the Lexington branch? Could rapid-transit trains be operated on the Lexington branch at the 10-cent fare? Whose duty is it to study the question? Our perfectly frank answers to these questions were interpreted to imply opposition to a plan for rapid-transit trains on that branch. The conclusion reached was that we were opposing something, but obviously we could not oppose anything until we knew what it was. The paper published an explanatory letter from me, but opportunity was afforded for poor public relations to exist between the Elevated and the Town of Lexington, due purely to a misunderstanding.

As general manager I have frequent occasion to represent the railway before public authorities and make a point of laying our cards on the table, stating that we are public servants and willing to go over any problem that the public wishes to submit. The consequence is that we are being met half way, and in general the representatives of the public are easy to deal with when they understand our willingness to do everything possible to meet their desires.

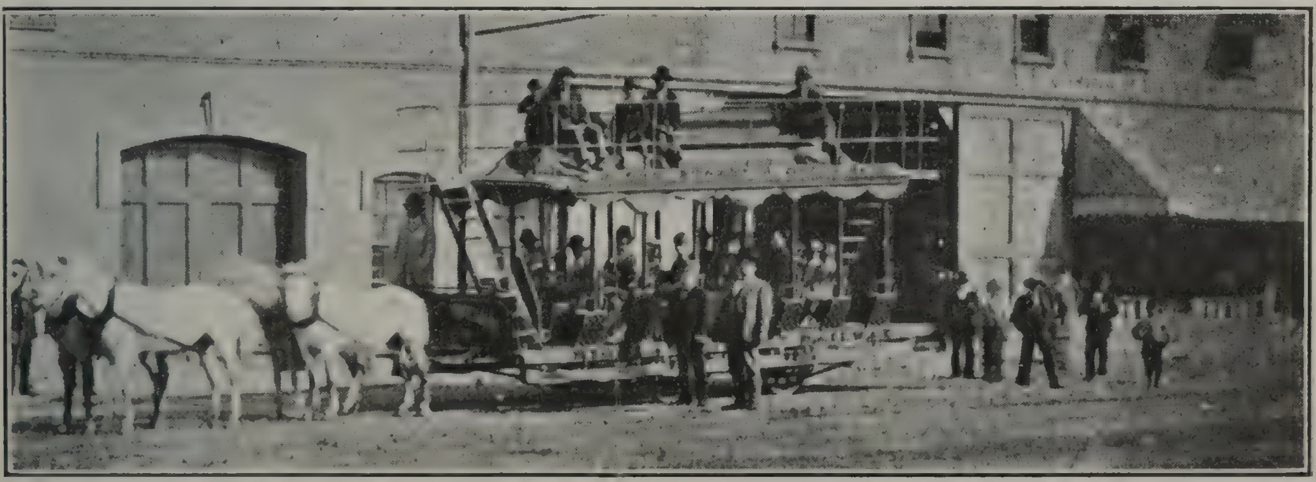
Thank God every morning when you get up that you have something to do which must be done, whether you like it or not. Being forced to work, and forced to do your best, will breed in you temperance and self-control, diligence and strength of will, cherfulness and content, and a hundred virtues which the idle will never know.—*Anon.*



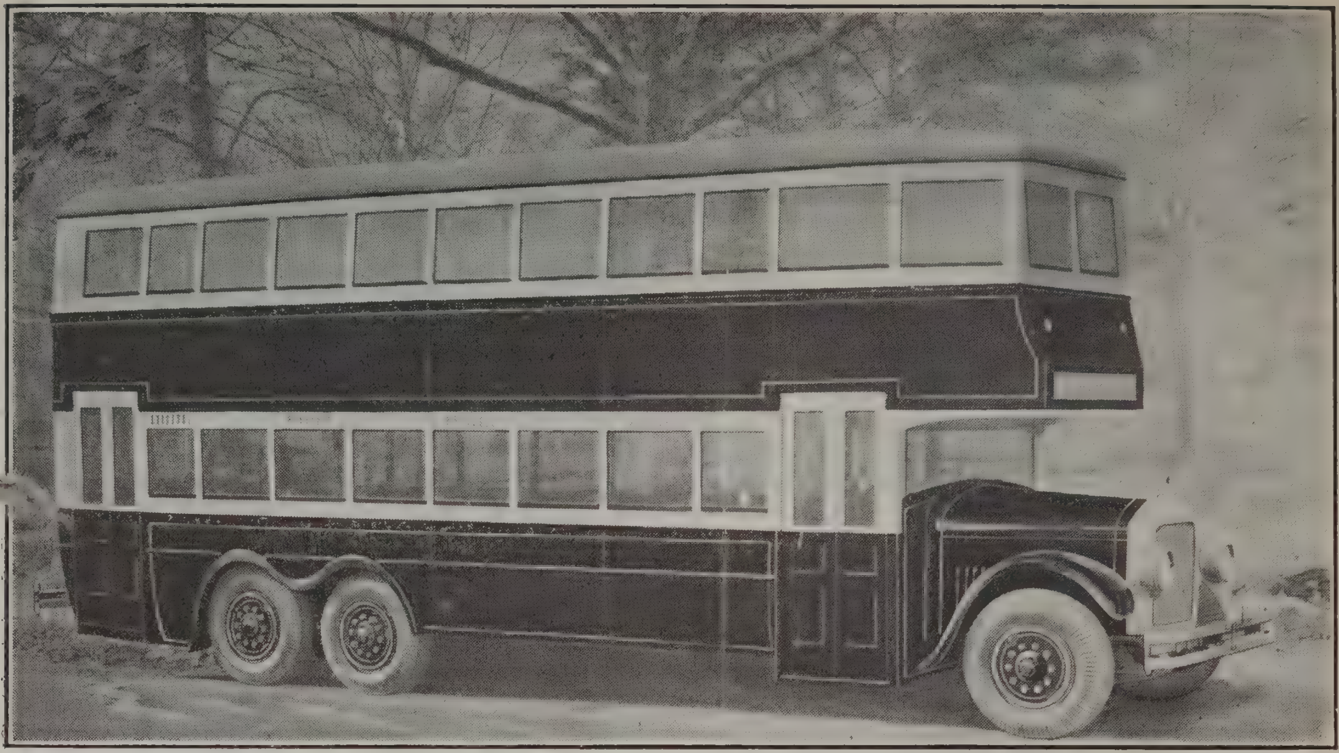
An early Boston experiment

DOUBLE-DECKERS NOT NEW IN BOSTON

The great interest which has been aroused in the city, due to the coming early installation of a double-deck bus on the Fenway-North Station route, reminds the old-timers of the double-deck cars which were tried out between 1875 and 1880 in Boston. Horse cars of this type were run on the Dorchester Avenue Railway from Broad and State Streets to Quincy, on the Highland Horse Railway from Grove Hall and Franklin Street to Temple Place, on the Metropolitan Railway from Forest Hills to Tremont House, on the Suffolk Street Railway from East Boston over the ferry to Boston. In 1891 the West End Street Railway put into operation a double-deck electric car built by the Pullman Company (as illustrated), which ran from North Cambridge to Bowdoin Square for about 40 days. The



Yes, this car actually was used in Boston



This double-decker will soon be operating here

presumption is that these cars were too heavy, but they are evidence of the progressive attitude of the local railway managements. The double-deck bus has proved a success in New York City, Chicago, and a few other places. The upper deck is attractive for sightseeing and hot-weather comfort. The experimental use of this vehicle in Boston will be followed with great interest by the public.

THE ALPHABET OF POPULARITY

Always smile pleasantly.
Borrow not at all.
Consider others first, self last.
Deal kindly and honestly with all.
Everywhere observe good manners.
Frankly admit your mistakes at once.
Give generously of your talents.
Help your fellows here and there.
Invite friends frequently to your house.
Judge not hastily nor too harshly.
Keep your troubles away from the world.
Lovingly give, liberally to receive.
Mind your own business very strictly.
Never gossip idly about others.
Often take time to act graciously.
Pay your debts promptly when due.
Quietly anticipate the wishes of others.
Refuse ever to act deceitfully.
Seldom criticize adversely.
Treat everybody equally well.
Usually listen more, and talk less.
Venture not too curiously.
Wherever you are, talk cheerfully.
Xtend your hand with kindly cordiality.
Yet never greet effusively.
Zealously guard your temper at all times.

—Grace Moncrieff Miller*

GRAND OLD LAND OF FREEDOM

(*Tune "Dixie Land"*)

By H. V. Neal

We live in a land, there's not another,
Where a man will love his brother,
'Tis a land, 'tis a land, 'tis a land, happy land,
The starry flag in glory waving,
Loyal hearts in honor braving,
For the land, for the land, for the land, blessed land.

Chorus

'Tis the happy land of Freedom, Hooray, Hooray,
The flag we love shall wave above,
The noble land of Freedom,
The land, the land, the grand old land of Freedom.
The land, the land, the grand old land of Freedom.

'Tis around the homes where the people gather,
One and all we call our father,
Happy land, happy land, happy land, happy land,
No foe can ever make us tremble
'Neath the Stars and Stripes assemble
Ev'ry man, ev'ry man, ev'ry man, ev'ry man.

Chorus

'Tis the happy land, etc.

"In God we trust," is our motto ending,
Heroes brave e'er stand defending
All the land, all the land, all the land, happy land.
'Tis Freedom's name we crown with glory,
All the world can read the story,
Of the land, of the land, of the land, blessed land

Chorus

'Tis the happy land, etc.

Here is an adage worth pondering: "A question well framed is half answered."

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*Miss Miller is instructor in the Boston Elevated course in business English.

HISTORY AND FUNCTIONS OF PUBLIC UTILITIES*

BY L. R. NASH

THIS lecture deals broadly with the economics of public utilities, and particularly of that utility known as the electric railway. Before details are entered into, it is necessary to define these two terms, "economics" and "a public utility."

Definitions

What is "Economics"? The word "economics" comes from two old Greek words meaning "managing the house." It was invented when man's affairs consisted largely in managing his own household. His dealings with his fellows were few and limited to barter. Gradually the word came to have a broader meaning. The word "house" also began to be applied broadly to business. *Now economics may be defined as the managing of our business—domestic, commercial or political.*

What is a "Public Utility"? A public utility has been well stated to be an enterprise which uses public streets and other public property for its structures. In general, ordinary business is not allowed permanently to occupy the streets and other public places.

Obviously an enterprise would not be allowed to use public property unless it rendered an essential public service. The street railway, electric light, gas and telephone utilities do this. Such services are necessary to a modern community as a whole, even if there are individuals who can get along without them. When these services are interrupted in a community business is upset. This fact has been illustrated in several cities where street-car service was discontinued because the city officials did not see fit to grant or renew suitable franchises, or insisted upon permitting ruinous "jitney" competition. Examples are Toledo, Bridgeport and Des Moines. In these cities, as a result, business became so thoroughly demoralized that the public demanded the return of the service on any necessary, reasonable terms.

Some Characteristics of Public Utilities

Public utilities differ in a number of particulars from other types of business. For example, in some cases they have the right of condemnation, which other enterprises have not. They can take, from private owners, land for right-of-way, pole lines, track and buildings—paying, of course, a just compensation.

Another feature is the high capitalization per dollar of annual revenue, which averages in the case of the electric railway above $5. The capitalization of the Boston Elevated Railway is between $4 and $5 per dollar of annual revenue, including the cost of the tunnels, subways, etc., which the railway does not own. The capital of the average manufacturing plant is less than its annual revenue, or, say, about 80 cents per dollar of revenue. Some businesses run as low as 25 cents, in other words they "turn over their capital" four times a year, whereas the electric railway does so only once in four years. Sometimes the "watering" of stock is charged, in part, with causing this high capitalization. This effect is greatly exaggerated. In Massachusetts, where utilities have been under public supervision for over thirty years, the capitalization represents closely the investment.

A third characteristic of public utilities is their naturally monopolistic quality. This is recognized in Massachusetts and many other states by the permitting of each class of utility to occupy its chosen field alone. Eventually, no doubt, it will be the general rule that if a public utility adequately and at reasonable rates serves the community where it is located, it will be allowed to continue that service indefinitely, without molestation. This is as it should be, because the investment is large compared with the annual revenue, as already explained. Competition which might not be unfair to another line of business—groceries, for example—would hamper the utility and necessitate higher rates. Thus in the electric railway business, competition would mean higher investment without commensurate gain in revenue.

Obviously a monopoly must be controlled in some way to prevent the raising of rates to the maximum that "the traffic will bear." This control is provided by public regulating bodies, such as the public service commissions. Under regulation a utility is a public servant, literally, because it is permitted only a fixed wage. Rates and fares are fixed at a point to cover operating expenses, including maintenance, and to provide for the payment of only such interest and dividends as will just attract new money. There are no profits as in ordinary business. Everything above a "fair return" goes back to the public in one form or another.

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*Abstract of lecture delivered before the employees of the Boston Elevated Railway, under the auspices of the Massachusetts Department of Education, University Extension Division.

Regulation eliminates profits, but it insures stability to a degree not enjoyed in general business. There are two reasons for this: (1) Under regulation, rates are, theoretically at least, adjusted so that even in time of depression they yield a reasonable return to investors; (2) the patronage of public utilities is much more stable than that of other business. People ride on the cars whether employed or not, they use electric light and cook with gas with only seasonal fluctuation, and they discontinue telephone service but rarely.

To illustrate the fact that the revenue and distributable incomes of public utilities are more stable than those of other large businesses, some data given in a bulletin from a federal reserve bank are convincing. The net profits in the iron and steel business, the automotive industry, oil refining, consumers' goods, producers' goods and public utilities were compared. Taking the first half of 1920 as standard, or 100 per cent, the steel industry profits fell to 41 per cent in 1921. In the second half of 1921 the automobile industry had a deficit of 37 per cent. The oil refining industry dropped to 15 per cent. There was a deficit of 134 per cent in producers' goods in the second half of 1920, while consumers' goods dropped to 35 per cent. On the other hand, a group of 133 public utilities, in the second half of 1920, dropped only to 84 per cent. For every other period they were above standard.

Another illustration is the Bell Telephone System, which for twenty years has paid dividends of from 7½ per cent to 9 per cent, with a margin for reserve. The electric light industry also has an excellent record.

Electric railways have had a period of difficulty due to the reluctance of the public to give up the 5-cent fare when costs mounted skyward. The level of fares in 1923, however, was 43 per cent higher than that of 1914, and this is restoring the railways to their rightful position of stability. The electric railways have come back and are going to stay back.

Finally the public utility business differs from others in that service must be given when requested, unless the cost involved is prohibitive. An electric railway must take every passenger who wishes to use its cars. The electric light company must serve all of its customers instantly and at reasonable rates. This obligation is taken as a matter of course, but it is in marked contrast to the obligations which are involved in ordinary business.

The Evolution of the Public Utility

Turning now from the general characteristics of the utilities, it will be profitable to note what the utilities have developed *from,* and what they have developed *into,* during the course of their history.

The oldest utility is the water industry, for water was vended from skins and jars for many centuries before aquaducts were built, and that was in very early times. Water was first delivered to houses in England in 1562, and the first water system in the United States was built in Boston in 1652, supplying water to the houses.

The first gas company in the United States with a record of continuous operation was a Boston company. It furnished gas in 1822. New York had the first street cars, in 1832. They were, of course, horse cars. Boston had none until 1856, but it had electric cars in 1889, only a year after their first successful use on a large scale, in Richmond. According to a recent estimate it would require 167,000 horses to handle the passengers who now ride in the Boston district.

The electric light industry practically began with a central station built in New York City in 1882, and Boston followed three years later.

The first telephone exchange was installed in 1876, and in Boston. It was Boston that furnished the money, foresight and courage to develop the great industry which now provides a telephone for every eight people in the country. The United States has 6 per cent of the world's population and 68 per cent of its telephones.

The Utilities as They Are Today

The electric railways have nearly 44,000 miles of track and over 100,000 cars, of which 80,000 are passenger cars. In 1923 they were carrying more than

15,000,000,000 passengers, of whom 12,500,000,000 paid fares, the others using transfers, etc. Steam railroads carry 1,200,000,000 passengers per year, or less than a twelfth of those carried by electric railways. The average steam railroad passenger rides about 40 miles, but the total passenger mileage of steam railroads is not greatly, if at all, in excess of electric railway passenger mileage.

Electric railways represent an investment of nearly $6,000,000,000, an incomprehensible sum of money, and they earn in gross revenues nearly $1,000,000,000 a year. They have 300,000 employees and, in spite of the discouragements of the past few years, were spending, in 1923, $250,000,000 in improvements.

The electric light and power industry has increased its generating capacity since 1882 from the few hundred kilowatts of the New York station to nearly 20,000,000 kw. In 1923, the central stations were putting out 55,000,000,000 kw.-hr. of energy, as compared with 25,000,000,000 in 1917, an increase of 120 per cent.

The cost of central station and distributing systems has been $6,000,000,000, the same as that of the electric railways. They earn slightly more than the railways, or $1,150,000,000. They have 150,000 employees and 13,000,000 customers.

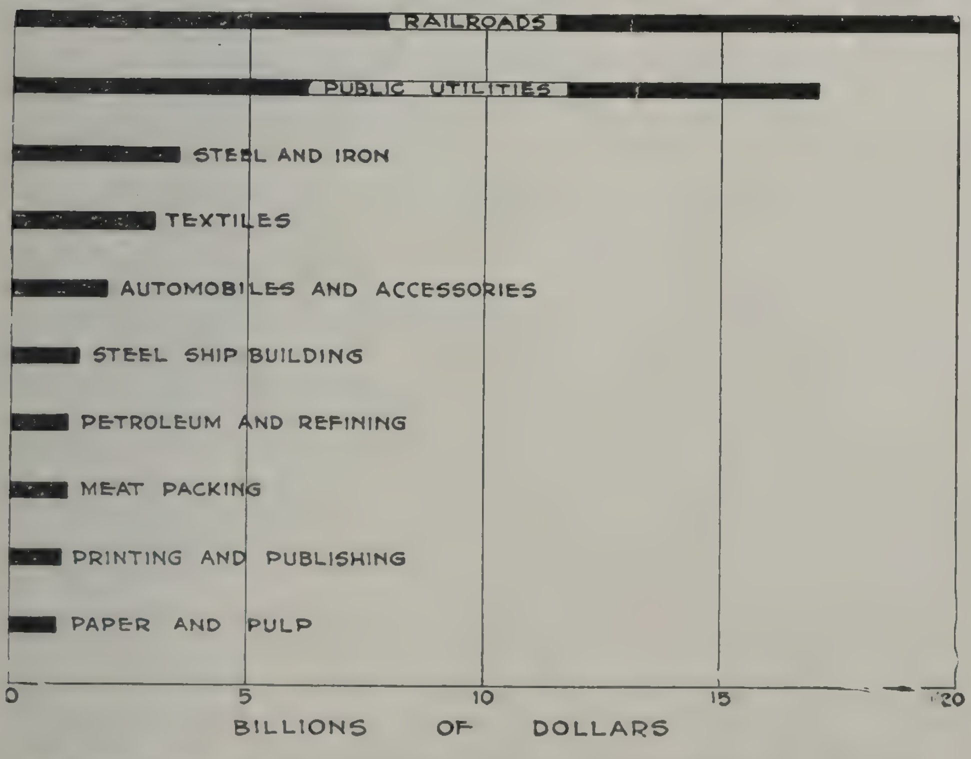
Many central stations furnish electric railways with power, due to their ability to produce it more cheaply under certain conditions. A station which Stone and Webster designed for the Edison Electric Illuminating Co. of Boston, for erection in Weymouth, is expected to produce energy for less than a pound of coal per kilowatt-hour. The same firm built the station at South Boston for the Boston Elevated Railway ten years ago, and was proud of the record of 1.75 lb. which is made. This indicates the progress which has been made in a decade.

In the gas industry the annual sales of manufactured gas total 375,000,000,000 cu. ft., and the annual revenues are $450,000,000. There are 70,000 miles of mains in streets, serving more than 9,500,000 customers. The investment amounts to about $2,000,000,000.

The telephone and telegraph companies have about $3,000,000,000 invested, two-thirds in the Bell System alone. Their annual revenues are $600,000,000 and there are 14,000,000 telephones in use.

To furnish data for a comparison of the magnitudes of the utilities, with their investment of $17,000,000,000, and other industries, the following figures are given: Iron and steel, $3,500,000,000 investment in rolling mills and furnaces; textile $3,000,000,000; automotive, including automobiles and accessories, $2,000,000,000; steel shipbuilding, $1,400,000,000; petroleum and refining, $1,200,000,000; meat packing, $1,200,000,000; printing and publishing, $1,100,000,000; paper and pulp, $1,000,000,000.

Although farm lands and property are valued at $80,000,000,000, more or less, $56,000,000,000 of this is in the land. Deducting the values of the buildings, and home and personal property of 6,500,000 farmers, there is left for equipment much less than the investment in public utilities. The mining industry represents a value of about $7,000,000,000, but a large part of this is in lands and other fixed property, and not in the development and equipment.



A Vast Sum Is Represented in the Capitalization of the Public Utilities of the United States.

Public Utility Rates and Other Prices

When the Boston Gas Company started it charged $5 per thousand cubic feet for gas. A few years ago the cost had come down to 80 cents. Electric light companies formerly charged from 20 cents to 25 cents per kilowatt-hour. Normal rates are now about one-half the early rates. For a given sum the companies are now furnishing ten times the amount of light furnished earlier, due to the present lower rates and higher lamp efficiency.

Electric railways have had to increase their rates somewhat over early years, partly because the service demanded is much greater in quantity and higher in quality, partly because labor is a large element in electric railway cost and labor costs have tremendously increased. Wages are now double what they were a few years ago and supplies have increased also. Fares, however, have been raised only 43 per cent above pre-war days, thanks to the large use of 1-man cars, with reduced platform wages per car-mile and lower maintenance cost, and to persistent attention to improvements in efficiency in every department.

Bus Transportation

A new element in connection with electric railways is the automotive bus. Urban electric railways were, about 1913, obliged to recognize the startling effect upon their revenues of competing automobiles and buses, which in general charged a 5-cent fare and were therefore known as "jitneys." (This is the term used for the nickel in some parts of the country.)

The jitney business started on the Pacific Coast, due to a business depression with consequent unemployment. In need of work, many men took advantage of the opportunity to pick up a living by utilizing their "Fords" or small buses to gather in such passengers as they could get.

As business conditions improved the worst of the jitney menace disappeared. Regulation by state commissions and by cities also brought it under control, as it was seen that this competition between transportation services was not economical. The regulation finally took the form of adequate bonding for accident prevention and of requiring "certificates of convenience and necessity," so that the jitneys (or buses, as they came to be termed), would not be permitted in competition with electric railways unless there was a field for them in sections or on streets where service was not already furnished.

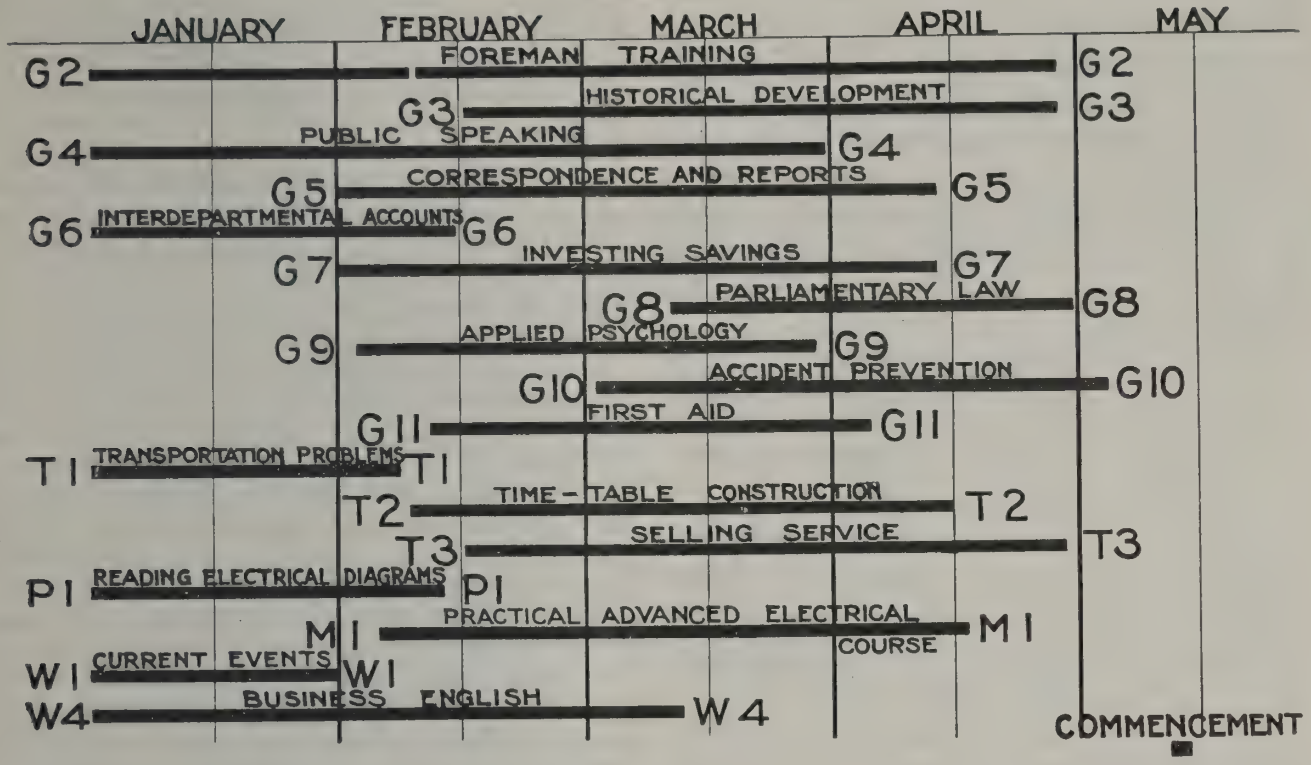
As this is written, twenty-five states require bus service to be licensed, and licenses are issued only when there is a need for the services which is not met by existing transportation. In nineteen of the states, commissions fix the rate of fare, and in nearly as many the schedules under which the buses may operate and the routes which they must follow are prescribed. Thus supervision of bus service is already approaching that to which we have long been accustomed with electric railways.

At first electric railways considered the bus a menace and outside their range of interest. Later they came to see that bus service might become an adjunct to their railway service. Now the principle is accepted that electric railways ought to handle the entire transportation problem of cities. If they cannot do it entirely with cars, the bus should be used as an auxiliary. There are many places where bus service can be operated at less cost than electric cars; but buses can be used economically in large cities only as feeders to the outlying railway lines, because of the intolerable congestion which would result from bus service alone.

Several fairly large cities have tried bus service alone for limited periods and found it entirely inadequate for mass transportation. If, in more congested sections, people want to pay the price for limited de luxe service rather than use the street car, it should be made available at a price necessary to cover its cost. The future of local transportation service may well be conceived of as a co-ordination of all kinds of transportation that people want, and not simply as electric railway service. This does not mean that the electric railways should take over the taxi business. That is not exactly a common carrier business, for a person hires a taxi for his exclusive use to go where he pleases. Buses follow routes and take such passengers as wish to travel over those routes, which is a different proposition from the taxi business.

As yet the number of passengers handled by electric railways in buses is a small part of the 1,000,000,000 estimated to be carried by all bus lines. Much of the independent bus service will in time be taken over by the electric railways.

GRAPHIC CALENDAR OF EDUCATIONAL COURSES 1926



EDUCATIONAL COURSES FOR SECOND SEMESTER

The general manager has distributed to all employees a circular describing the educational courses which are to be given during the next three months. They are shown graphically on the accompanying chart. The aim has been to meet all reasonable requests for courses, at the same time keeping the program as simple as possible. While most of the registrations will be in when this issue of "Co-operation" is distributed, it will not be too late to register at the first meeting scheduled for each course. All employees are urged to read the prospectus carefully because there are some unusual opportunities included in the program for broadening the mind and furnishing it with up-to-date information.

BUSES AND OBSOLETE CARS IN THE UNITED STATES

On Jan. 1, 1924, 14 per cent of all street railways in the United States operated buses. In 1925 the percentage was 19 and in 1926 it was 35. In other words, more than one-third of all the street

OBSOLETE CARS IN THE UNITED STATES

Geographical district	Per cent of passenger cars over 20 years old
New England (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut)	29.1
Middle Atlantic (New York, New Jersey, Pennsylvania)	42.6
East North Central (Ohio, Indiana, Illinois, Michigan, Wisconsin)	30.4
West North Central (Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas)	28.2
South Atlantic (Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida)	20.6
East South Central (Kentucky, Tennessee, Alabama, Mississippi)	40.8
West South Central (Arkansas, Louisiana, Oklahoma, Texas)	26.1
Mountain (Idaho, Colorado, Utah, Wyoming, New Mexico, Arizona, Nevada, Montana)	17.1
Pacific (Washington, Oregon, California)	17.1

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*The committee in charge of these courses comprises J. P. Boyden, F. W. Carroll, E. H. Chandler, L. J. Dickey, T. A. Dunbar, C. B. Gleason, A. S. Hall, E. R. Kelly, R. B. Smyth, (Miss) L. E. Stone, F. I. Wilkins.

railways now operate buses. In comparison with these figures the data in the accompanying table regarding old types of cars in use are significant.*

New England, as a district, in comparison with others, does well, but the Boston Elevated Railway today has only 11 per cent of cars in service over 20 years, which means much to the army of car riders in the territory served by this railway.

THE PUBLIC CONTROL ACT

What Boston Elevated Men and Women Should Know About It

At the request of the general manager, H. Ware Barnum, general counsel of the railway, has prepared the following synopsis of the Act of the Legislature under which the property has been operating for more than seven years. This Act continues to 1928, and thereafter until it is terminated by two years' notice.

Chapter 159 of the Special Acts of 1918 is entitled "An Act to Provide for the Public Operation of the Boston Elevated Railway Company."

This Act, in its first section, creates a new state board called the Board of Trustees of the Boston Elevated Railway Company, consisting of five persons to be appointed by the Governor, subject to confirmation by the Governor's council. The term of office of the trustees is fixed at ten years. If public control continues beyond that period a new board is appointed in the same manner.

To this state board the Act transfers powers of management and operation previously vested in the Board of Directors of the private corporation. The powers thus transferred include the right to make contracts in the name of the corporation; to receive and pay out all income or other monies to which it is entitled; to issue stock, bonds or promissory notes of the company; and to appoint and remove all officers. The Act also gives to this same board powers of public regulations which to some extent had previously been vested in the Public Service Commission. These include the regulation of the character and extent of the service to be furnished, the regulation of the issue of transfers and establishment of transfer points and the fixing of rates of fare.

With reference to fares, the Act sets up a rather complicated sliding scale as follows: A reserve fund of one million dollars is created, from which is to be paid any loss in operations and into which is to be paid any profit. The trustees are directed to establish rates of fare which in their judgment will be sufficient to meet the cost of the service, which cost includes operating expenses, taxes, rentals, interest on all indebtedness, such allowance as the trustees deem necessary or advisable for depreiation and losses in respect to property sold, destroyed or abandoned, and the established dividends on the preferred stock of the company and dividends on the common stock at the rate of 5 per cent for two years, 5½ per cent for the next two years and 6 per cent thereafter. The trustees are also to establish different grades of fare, four below and four above the rate in effect; and if the reserve fund falls below $700,000 at the end of any 3-month period and during that time the income has not met the cost of service, the next higher grade of fare is to be put into effect; and if the resesve fund exceeds $1,300,000 and during the preceding three months the income has exceeded the cost of service, the next lower grade is to be put into effect.

As a matter of fact, this idea of changing fares by automatic changes every three months was found to be impractical and was later changed by the Legislature to an annual basis. Any amounts paid by the State to meet deficits which have not been repaid must be subtracted from the cash in the reserve fund. A broad discretion is vested in the trustees to change the rates of fare when necessary but their acts are subject at all times to the principle of service at cost.

Inasmuch as the State was taking over the complete control and operation of the railway, the Act provides that if in any year the rates of fare which are established in fact do not meet the cost of service and the reserve fund of one million dollars is used up, then any loss above that amount will be paid over by the State to the trustees. Any such amount paid by the State is assessed upon the cities and towns in which the lines are operated in proportion to the number of persons in such cities and towns using the service at the time the payments are made by the State. If, in later years, receipts exceed the cost of service, any amount in the reserve fund in excess of the million dollars with which it was started is paid over to the State to be repaid to the cities and towns until any amounts for which they have been assessed have been repaid. Thereafter, any such excess remains in the reserve fund until needed to meet the cost of service. Fares are then to be reduced as described above.

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*See Electric Railway Journal, Jan. 2, 1926, page 27.

Whenever public control ends there is to be an accounting for the whole period of public operation, the State bearing any loss and receiving any profit which has accrued during the entire period.

As a condition to the Act taking effect, the stockholders were required to subscribe for three million dollars of new 7 per cent preferred stock, one million dollars of which was used to establish the reserve fund, which has been described, and the remaining two million dollars was used in payment for additional plant and equipment.

The stockholders also were required to give to the State an option to purchase all of the property and assets at any time during public control, for an amount equivalent to the cash which has actually been paid in by the stockholders and the assumption by the State of all outstanding bonds and other obligations.

The Act also provides that, if public control is terminated, the private company may manage and operate upon the same service-at-cost principle as described above but that dividends in excess of 6 per cent shall never be paid upon the common stock. The State, however, reserves the right to exercise such regulation and supervision as the Legislature may later adopt.

Public management and operation under this act continue for ten years and indefinitely thereafter, upon the same terms and conditions, until such time as the Commonwealth shall elect to terminate it by act of the Legislature passed not less than two years before the date fixed for termination.

There are many minor provisions covering details in carrying out the general ideas which have been described.

The Supreme Judicial Court of Massachusetts has summarized the Act thus:

"In essence this Act constitutes an agreement between the Boston Elevated Railway Company and the Commonwealth that the latter shall take over the management and operation of the railway company and shall pay therefor the amounts specified in way of compensation for the use thereof. The public operation is undertaken by the Commonwealth, not as a source of profit, but solely for the general welfare. The main design of the Act is public operation of the railway company at such rates of fare to be fixed by the trustees from time to time as shall afford revenue sufficient to defray all charges and the dividends established by the Act."

SAFETY-GRAPHS*

When caution becomes a habit, accidents will be few.

Chance travels on crutches.

Be careful today—tomorrow may be too late.

The wife of a careless man is almost a widow.

A.E.R.A. PRESIDENT TO ADDRESS EMPLOYEES

All members of educational classes and others interested are invited to attend the first general educational meeting of the season at Sullivan Square at 7.30 p.m., Tuesday, Feb. 9. Frank R. Coates, president of the American Electric Railway Association, will speak. There will also be brief talks on accident prevention, humorous and instructive motion pictures and other interesting features.

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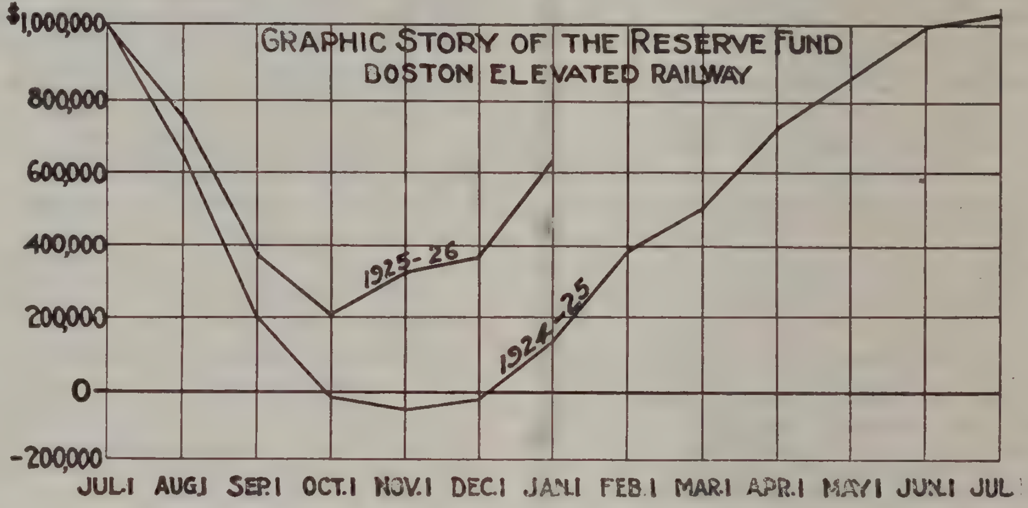
*Courtesy of J. H. Handlon.

Our double-deck service will not be as in France

CHANGES IN THE RESERVE FUND

1924-25		1924-25		1925-26	
July 1, 1924,	**$1,000,000**	Jan.	269,649.08†	**July 1, 1925,**	**$1,000,000**
July	$353,245.79*	Feb.	118,183.05†	July	$249,477.93*
August	445,826.47*	March	211,955.71†	August	367,593.94*
Sept.	207,334.30*	April	130,636.68†	Sept.	176,763.97*
Oct.	36,155.55*	May	139,081.44†	Oct.	117,703.96†
Nov.	15,031.47†	June	25,792.94*	Nov.	45,265.00†
Dec.	152,527.52†			Dec.	289,347.71*
Profit and Loss			$ 51,865.43		

†Increase *Decrease



DECEMBER OPERATION

	1925	1924
GENERAL FINANCIAL DATA		
Revenue exceeded cost of service	$289,347.71	$152,527.52
Operating revenue per car-hour (A.E.R.A. std.)	$6.29	$6.30
Operating revenue per car-mile operated	65.49c	66.21c
Average fare per revenue passenger	9.273c	9.206c
Ratio operating expense to operating revenue	66.09%	69.72%
PASSENGERS CARRIED		
Revenue passengers	34,023,131	33,963,927
Per cent 5c and 6c passengers	17.67%	19.08%
Revenue passengers per car-mile operated	6.909	7.072
OPERATING FACTS		
Trips operated	640,869	609,959
Car-miles operated:		
Rapid-transit lines	1,292,210	1,296,409
Surface, two-man	2,138,559	2,304,421
Surface, one-man	1,186,173	1,073,349
Express, newspaper and sprinkler cars	7,444	7,168
Motor bus	300,138	121,326
Total miles operated	4,924,524	4,802,673
ACCIDENT DATA		
Accidents per 10,000 car-miles	2.06	2.04
Revenue passengers carried per accident	33,561	34,717
Average number of witnesses per accident	3.25	3.96
COMPLAINTS AND DEFECTS		
Complaints in regard to car service	18	26
Employees complained of by car riders	92	100
Car defects reported per 10,000 car-miles	5.8	7.8
INFORMATION ABOUT POWER		
D.c. kw.-hr. output gross for month	27,190,345	27,255,415
Maximum kw. load	83,190	82,700
Tons of coal consumed	23,712	24,024
Lbs. of coal burned per d.c. kw.-hr at cars	1.958	1.979
Operating and maintenance power cost, incl. depr.		
Per d.c. kw.-hr for car service	0.869c	0.958c
Per revenue car-mile	4.78c	5.21c
Kw.-hr. per revenue car-mile	5.492	5.436

January 23, 1926. EDWARD DANA, *General Manager.*

ALLIED PRINTING TRADES UNION LABEL COUNCIL BOSTON 31

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Volume 5 FEBRUARY, 1926 Number 2

1926 Elements of Success

COURTESY

We all want the Boston Elevated Railway to be known both here and abroad as a road of courtesy. The record for the last year was good; let us make this year's record better.

COURTESY is at the basis of pleasure and satisfaction in one's daily work. Good transportation service requires courtesy to please the public.

COURTESY is an individual's greatest asset in business or social activities.

COURTESY is also the cheapest asset that an individual can acquire. Effort and self-control are all that it costs.

COURTESY pays a golden harvest, in satisfaction and in actual financial returns. It is therefore not a matter of sentiment alone, but it is a matter of real business.

A courteous person always spreads sunshine along the way. His desire to please is contagious. To paraphrase an old adage which applies to the subject of courtesy, "Smile, and the world smiles with you; frown, and you frown alone."

BOARD OF PUBLIC TRUSTEES
Left to right: Messrs. Coffin, Miller, Powers, O'Hare and Marshall

PUBLIC TRUSTEES OF THE BOSTON ELEVATED RAILWAY

On the facing page is a recent photograph of the present trustees of the "Elevated," taken in the board room in the Park Square Building. The chairman is Samuel L. Powers, appointed to the board Oct. 28, 1918, and elected chairman Aug. 12, 1925. The other members of the board, with dates of appointment, are: Stanley R. Miller (July 1, 1918); Winthrop Coffin (Feb. 15, 1919); J. Frank O'Hare (June 1, 1922), and Andrew Marshall (Sept. 23, 1925).

Since public operation was inaugurated on July 1, 1918, there have been ten trustees, including the present board. Former members, with their terms of office, were: Louis A. Frothingham (chairman, July 1, 1918 to Oct. 23, 1918); Wm. M. Butler (July 1, 1918 to Dec. 16, 1918; elected chairman Oct. 28, 1918); John F. Stevens (July 1, 1918 to May 11, 1922*); Galen L. Stone (July 1, 1918 to Jan. 15, 1919), and James F. Jackson (chairman, Jan. 2, 1919 to Aug. 12, 1925).

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*Mr. Stevens died on the latter date.

STORRS' DAILY DOZEN FOR ELECTRIC RAILWAYS

1. Exercise Our Eyesight

At the annual convention of the Central Electric Railway Association, held in January at Indianapolis, Lucius S. Storrs, managing director, American Electric Railway Association, told of his friendship for Walter Camp, originator of the "daily dozen." Mr. Storrs applied the same idea to the electric railway organization. In respect to eyesight he said:

> "Look around and see what the conditions really are. Accept the situation and whether there is hope for increased business in our respective territories or no hope, let us see it clearly and know the truth."

Fortunately in Boston Elevated territory there is every reason for optimism, as there is in the electric railway field generally with a few exceptions, so we can say: "Look around and see what opportunities there are for giving Greater Boston the best possible service with the transportation facilities which we have at hand."

"CARRYING ON" UNDER BLIZZARD CONDITIONS

The fury of winter's blast descended upon an otherwise tranquil winter on Thursday, Feb. 4, 1926. Within a period of twelve days our entire organization was called upon to struggle with the difficult problem and over $250,000 has been expended in this brief period.

The management appreciates fully the conditions which have been encountered and the spirit displayed by our forces in fighting under these conditions to render service needed so greatly by the patrons we serve. Long hours, hard work and nerve strain are inevitable and require courage, ambition and a willingness to be of service on the part of the individual.

Some industries can close down under extreme conditions. Ours must function in the interest of orderly city life. Individual good judgment and initiative are at a premium under such stress. Many an employee can be of greatest value by using good judgment and showing real enthusiasm to render service. His record is a personal one in that he realizes he has done his part in the right way and at the right time to help the machine to function. If he is proud of his industry and the extra work he is called upon to do, it will be stimulating. Cars are delayed, bunching and overcrowding naturally result, but the trainman who prevents his car from being so overcrowded that it can hardly make headway, and who makes his passengers realize by proper explanation that it is to their own interest to co-operate with him in preventing excessive overcrowding, is doing all that he can to help meet the conditions. Every unit in the machine must rise to the occasion to make the record a creditable one.

"GYPSY GIRL" PLEASES

The Boston Elevated Musical Club scored a hit with its musical comedy, at Symphony Hall, on Jan. 19 and 20. Good music, wholesome fun, and creditable acting and dancing filled an entertaining three-hour program, which was also broadcast from Station WNAC. Eugene McDonald was the author and director of the production, while the management behind him comprised A. C. Eaton, general chairman; H. L. O'Neil, assistant chairman; R. L. Leahy, treasurer, and Miss P. R. Naven, secretary. Eighty-five persons made up the cast, about evenly divided between men and women. The performances, which cost over $3500, were well patronized and successful. At a dress rehearsal of the "Gypsy Girl," war veterans from local veterans' homes were entertained.

APROPOS OF FEB. 8 1926*

(With apologies to Edgar Allan Poe)

How we miss the trolley cars
with the bells,
Trolley bells!
What a world of perturbation
their absence brief foretells!
How we fret and fume and fuss
In the blizzard air of night
While the cars that ne'er delay us
In the snowstorm seem to fail us
And we need them most tonight.
Losing time, time, time
In a snowdrift on the line.
Where's the tintinnabulation that so
regularly wells
From the bells, bells, bells, bells,
Bells, trolley bells?
From the missing and the stranded
trolley bells?

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*The short-time but distressing tie-ups which accompanied the blizzard of this date suggested to the general manager, by contrast, Poe's lines on "The Bells."

Common sense and interests of all the people call for co-operation in a spirit of understanding and goodwill on the part of all elements making up the industrial life of the nation. Deep down beneath the surface of every militant movement may be found the germ of revolution. If it is allowed to develop it will grow and multiply until it menaces the very existence of the republic—*President Green, of the American Federation of Labor.*

HORSE CAR ON MEDFORD STREET, JULY 9, 1882

REGULATION OF PUBLIC UTILITIES†

By L. R. Nash

THERE is an old adage—"Competition is the life of trade"—and in business generally competition is the rule. For over thirty years federal laws have provided for competition in industry, and for a number of years there has been a commission, known as the Federal Trade Commission, which insures compliance with the law. In ordinary business, competition insures good service at reasonable prices, because patrons will trade only where they get this.

Regulation of Monopolies

In general, public utilities are not in competition, and the question is how to secure from these monopolies adequate service at reasonable rates. Three plans have been tried: (1) suitable provisions in the franchise; (2) direct legislation; (3) regulation through public service commissions.

The first of these plans has not proved effective because changes in conditions are bound to occur over a long term of years. The 5-cent fare, provided in many franchises, has become inadequate, being often less than necessary for operating expenses alone. As a result the restriction as to fare has been removed to a large extent, otherwise the industry would have become hopelessly involved.

Direct legislation, also, has proved unsatisfactory in meeting the changing requirements of utilities. While legislation has the advantage over the franchise that it can be changed from time to time, the fact is that legislators have too many different responsibilities to permit them thoroughly to study the needs of the utilities.

Under the third plan mentioned, namely regulation, the legislature delegates to commissions the duty of modifying rates and service conditions as circumstances require. In other words, regulation is a legislative function delegated by the legislative bodies of the states to appropriate commissions.*

Regulation has been in effect in this country, in form at least, for eighty years. In 1844 the first commissions, regulating railroads only, were established in New Hampshire and Rhode Island. The Massachusetts Railroad Commission was organized in 1869. By 1885 there were twenty-seven commissions regulating railroads, but their powers were not broad. They dealt mainly with service, accident prevention, collection of statistics of operation and the making of annual reports, and acted in an advisory relation to the legislatures.

The first real public service commission having supervision over local utilities like electric light and gas companies and street railways was appointed in Massachusetts in 1885, but at first its supervision extended only to the gas companies. Two years later it took jurisdiction over electric light and power companies, in a limited way; but in 1888 it included rates and, in 1894, capitalization also.

In the meantime (1887) Congress had passed the Interstate Commerce Act, creating the Interstate Commerce Commission to deal with railroads as far as their interstate business was concerned. The commission soon expanded its powers, in 1906, for example, taking supervision over rates, until it has now a strong hold on the whole railroad situation.

Public service commissions having full jurisdiction over local utilities were organized in 1907 in Wisconsin and New York. The former, through its careful investigations and well-considered decisions, became a model for many of the commissions which have since been formed in all of the states except Delaware,† and in the District of Columbia, Porto Rico, the Philippines and Hawaii. In some cases the jurisdiction of the commissions is limited, but most of them control practically all classes of local public utilities.

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†Abstract of lecture delivered before the employees of the Boston Elevated Railway, under the auspices of the Massachusetts Department of Education, Division of University Extension.

*It will be remembered that there are three functions of government: legislative, executive and judicial. One branch passes the laws, another enforces them, and the third interprets and applies the laws and determines their constitutionality. Being delegated by the legislature the function of regulation is therefore of a legislative character.

Functions of the Commissions

Among the functions of commissions possibly the most important is the *controlling of rates.* Practice regarding the fixing of rates is not uniform. These may either be fixed in detail, or the maximum may be fixed, the company being allowed to work out the remainder of the schedules as it sees fit. Rate changes may be brought about either through complaints or petitions brought before the commission, or through action of the commission itself when it appears that rates are not equitable. Special rates for individual customers have been abolished by the commission, to the entire satisfaction of the utilities.

A second function of the commissions is the *regulation of service.* In some cases the numbers of cars which railways shall operate have been specified, or the number of seats which shall be furnished in ordinary hours and in rush hours in relation to the number of passengers carried. In electric service the permissible variation in voltage may be stated, or the heat units per thousand cubic feet of gas. Inspections are made to insure safe conditions on properties, and accident reports to furnish a basis for the removal of the causes of accidents are required. Some commissions maintain laboratories where customers' meters can be tested for accuracy.

One of the most troublesome problems of the commissions in connection with electric railways is that of *extensions.* Real-estate developments may indicate the desirability of extended service, but the profitableness of such service may be questionable. If the real-estate interests behind the development are willing to finance the extension the problem is simplified. But there are cases where extensions of electric railways or other properties have to be built to assist needed community development and expansion. If the system as a whole is reasonably profitable it may assume for a time such burdens, which for a time may be unprofitable. On the other hand, if further burdens cannot be afforded, existing patrons should not be penalized, through rates higher than would otherwise be necessary for the benefit of real-estate promoters or small groups in the community.

Still another thing that the commissions have done is the establishing of *standard accounting systems* so that reports from similar utilities may be comparable. This is not yet general, but most commissions recommend such systems, and some go so far in their use as to prohibit the keeping of any other than the standard accounts, or even memoranda, without permission.

Some commissions also have *jurisdiction over capitalization.* Of the thirty-eight commissions regulating public utilities, twenty-six require that approval be secured for the issue of bonds, stock or notes to run more than twelve months. The amount and nature of the security and the purpose for which the money is to be used must be explained, and a hearing may be held to bring out all pertinent facts. The issue is not approved until it has been shown to be a proper one. The Pennsylvania commission, one of the twenty-six, does not directly control the issuing of securities, as that is specifically covered by law. In that state when companies issue additional capital they file statements with the commission as to nature, amount and purpose of the securities, and report regarding the actual expenditure of the money.

The best justification of the control of securities by commissions is that investors appreciate the approval of public-service securities by the commissions. It insures an investigation and, while there is no guarantee of profitableness of an enterprise, it gives investors confidence. The Investment Bankers Association has endorsed this supervision over capitalization by public service commissions and recommended that it be extended to all states.

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†The principal city in Delaware, however, has a commission.

In twenty-eight states the commissions have been given jurisdiction over competition between utilities, by requiring "*certificates of convenience and necessity*" for new undertakings. If it is not proposed to duplicate existing service, and if the promoters of an enterprise have reasonable financial stabilty, these certificates are promptly granted. Sometimes certificates are granted to permit competition where the existing utility has not been giving good service. Other commissions have preferred to give the offenders another chance to mend their ways, which appears to be fair to both the utility and its customers. Two self-supporting utilities in a given territory must have higher rates than one; hence the punishment of a recreant company by permitting competition punishes the customers as well.

All of the regulatory proceedings which have been outlined, with the possible exception of control of capitalization, lead directly or indirectly to the securing of adequate service at reasonable rates. Some commission orders have gone beyond the scope described and have assumed for the commissions some of the functions of management. Appeals to the courts have been taken in such cases, and in a recent case before the United States Supreme Court it was clearly held that the commissions are regulatory and must not assume the functions of management. Management functions belong by law to the utilities and cannot be taken away from them.

Organization of the Commissions

Commissions range in *number of members* from three to seven, the usual number being three. One state commission has seven members, while a few commissions have five.

Generally the commissioners are appointed by the governor with the approval of the higher branch of the legislature. In some states the commissioners are elected, but the tendency is fortunately away from this plan. A commissioner directly responsible to his constituency has difficulty in dispensing wholly impartial justice.

The term of the commissioners is usually six years, and when there are three commissioners the term of one expires every other year.

The commissions generally have staffs of assistants, accountants, engineers, rate experts, auditors and legal advisers in order that they may carry on the voluminous work that many of them have to do.

Typical Procedure in a Rate Case

Assume that in a given city there is dissatisfaction with the rates. The city, or a group of citizens, petitions the commission for a hearing, for which a time is set and all interested parties are notified. The first hearing may be merely preliminary, adjournment being taken to permit the preparation of the case if necessary. This may involve the examination of books and an appraisal of the property. At the second hearing all pertinent data are put in evidence by any one qualified to do so. Then briefs are filed by the attorneys, summarizing the evidence and suggesting the form of the finding or decision which the commission should make. Finally, after due consideration, the case is decided, sometimes a year or more after the petition is filed.

Of course many complaints are handled in a much less formal way than the above. Usually the difficulty can be settled when the two parties at interest can be brought into conference.

The decision of the public service commission is not the last word, for if either party at interest feels aggrieved it can appeal to the courts.

As has been suggested, the state commissions do not all have exclusive jurisdiction over local public utilities. In the ten states which have only railroad commissions some cities have charter rights of supervision of the utilities. In others, with commissions having full regulatory powers, the cities were not obliged to surrender the powers which they possessed when the commissions were formed.

As between city and state-wide regulation public sentiment strongly favors increasing the state jurisdiction. The state can afford to maintain a more adequate staff than an individual city, and this is available to any city to adjust irregularities and dissatisfaction. When cities have powers of regulation they act through city councils and legal advisers. City officials are too busy with other matters and are subject to political pressure. It is therefore difficult for them to get the utility's point of view. State regulation is removed from local influences and provides for continuity of experience.

Furthermore, the utilities that serve large cities go outside the limits with their services. The cities can regulate only within their own borders; hence in such cases there is conflict of jurisdiction. Even with the state commission regulation there is some conflict of jurisdiction. For example, confusion may occur when a utility operates in several states and, therefore, under several commissions, due to differences in accounting standards and in procedure.

Recently the members of these commissions in an informal organization have agreed upon uniform systems of accounts for electric power and gas utilities. Such a system has been used for the electric railways for several years. There is a further movement under way to secure uniformity in the laws under which the commissions operate. These regulatory laws are inconsistent with respect to the regulation of municipal utilities. In a few states only are the operations of the municipal utilities under the jurisdiction of the state commissions.

In connection with the regulation of the utilities by commission an important problem is to furnish the utilities with an *incentive to efficient operation.* In general, the commissions in fixing rates are guided by the cost of service, including operating expenses, return on the investment and provision for upkeep of the property. There is no encouragement in this to operate existing plant most economically or introduce devices and practices which will improve economy. A graduated scale of return would provide the desired incentive.

The results of commission regulation since 1914 are reflected in the compilations of decisons known as the "Public Utility Reports," of which there are now about fifty volumes. These cover about 5,000 decisions, of which only 470 have been appealed. In 285 appeals the commissions were sustained and in 185 their decisions were reversed. Of the latter cases 171 were in the interest of the utilities and seventeen in favor of the cities. The utilities won the appeal on their merits in sixty-two rate cases and fifty-five service cases. Of the fourteen cases decided in favor of the cities eight decisions were on the merits of the cases. Thus out of 185 cases wherein the commissions were reversed they erred in favor of the utilities only eight times. They favored the cities in about 150 cases, excluding jurisdiction cases.

These figures show a leaning in favor of the cities, but on the whole a small number of appeals and a surprisingly small number of reversals. In general, therefore, it may be said that the results of regulation have been satisfactory and it may be extended safely.

For those who wish to go further in this subject, a book on "Public Utility Rates," by Harry Barker, is recommended. The problem of regulation has also been discussed editorially in "Public Utility Reports." The writer has put his ideas of incentives to good operation into the form of a paper entitled "The Hope of Reward." Another of his papers bearing on the general subject of this lecture is "Commission Regulation of Business."

THINKING

If you think you are beaten, you are;
If you think you dare not, you don't;
If you'd like to win, but you think you can't
It's almost a cinch you won't.

If you think you'll lose, you're lost,
For out of the world we find
Success begins with a fellow's will—
It's all in the state of mind.

If you think you're outclassed, you are;
You've got to think high to rise,
You've got to be sure of yourself before
You can ever win a prize.

Life's battles don't always go
To the stronger or faster man,
But sooner or later the man who wins,
Is the one who thinks he can.

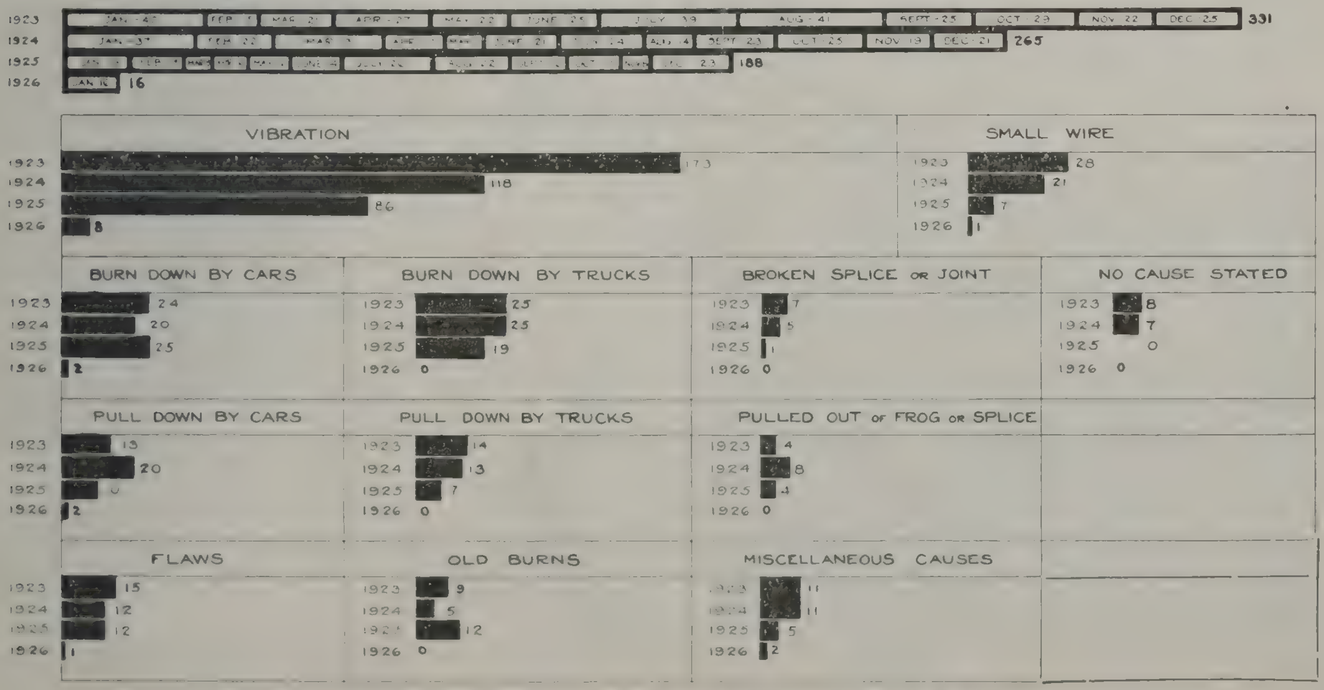
CUTTING DOWN THE TROLLEY BREAKS

Previous to 1924, the repairs and maintenance of overhead trolley wires were based on defects located by periodic inspections of the lines. In 1924 a new system was adopted, based on the number of trolley-wheel "passes." The life of the materials used which are subjected to wear is determined by service tests. All line material subjected to wear is renewed and adjustments are made after a certain number of trolley wheel passes, the frequency of renewal being determined by the service on the line. For example: In the Tremont Street subway, from the junction of the Tremont and Boylston Street subways to the cross-overs north of Boylston Station, there are 2295 trolley wheel passes per day. Renewals or repairs are made every ninety-eight days. On Dorchester Avenue, between Savin Hill Avenue and Park Street, Dorchester, there are 658 trolley wheel passes per day and renewals and repairs are made every 342 days.

In 1923, under the old system there were 331 trolley-wire breaks and 76 miles of trolley wire was renewed. In 1924, during transition from the old to the new system, there were 265 trolley-wire breaks and 69 miles of trolley wire was renewed. In 1925, under the new system, there were 188 trolley-wire breaks and 32 miles of trolley wire was renewed.

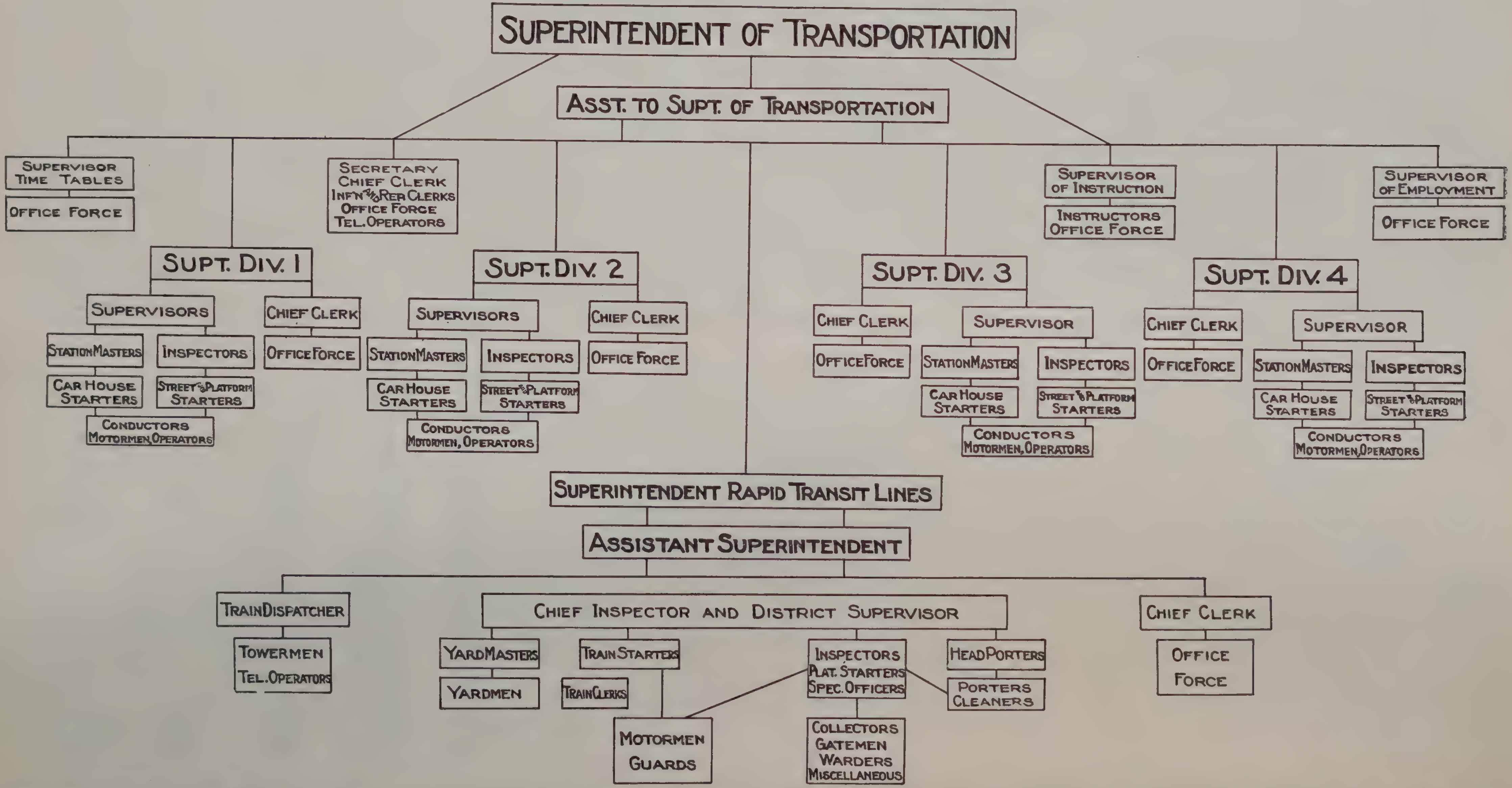
F. R. COATES VISITS RAILWAY

The president of the American Electric Railway Association, F. R. Coates, of Henry L. Doherty Company, New York City, was the guest of the management on Feb. 9, when he addressed a gathering largely made up of members of the educational classes. He concluded with the "Daily Dozen for Electric Railways," prepared by L. S. Storrs, managing director of the association, of which the first is reproduced elsewhere. The other speakers were L. E. MacBrayne, general manager Massachusetts Safety Council, and R. C. Bush, manager Transit Mutual Insurance Company. The chairman, Mr. Dana, also called to the platform James Donohue, J. M. Patten and Thomas Kivell, who had represented the railway in a foreman-conference demonstration before the Central Electric Railway Association. Several selections were given by the Boston Elevated Musical Club Orchestra, and educational and amusing motion-picture films were shown.



A CREDITABLE OVERHEAD-MAINTENANCE RECORD

ORGANIZATION OF TRANSPORTATION DEPARTMENT



THIS IS THE SECOND IN A SERIES OF ORGANIZATION CHARTS. THE GENERAL ORGANIZATION WAS SHOWN IN THE DECEMBER, 1925, ISSUE

Christmas Tree at Arborway Station, 1925

WHY "EL" ACCIDENTS ARE BECOMING FEWER

By H. E. WHEELER,
Conductor No. 4233

For a man to work on the Boston "El,"
His references must be best.
His health, his height, his weight, his eyes
Must pass a standard test.

And next he learns to drive a car
And watch the traffic ways.
And then he goes into the school,
If he's put in fourteen days.

To break in as conductor
For a week they put this chap,
And he begins to find quite soon
That his job is not a snap.

Well, after that he tries his skill
On both the jobs together,
He breaks in on a one-man car
In every kind of weather.

Then in another week or so,
They send him back to school,
To see if he still wants the job,
And if he's calm and cool.

He next is sent o'er all the routes,
And learns to work at night,
They watch his safety record
In the dark as well as light.

And on the different types of cars
He now must learn to drive,
And also how to jack them all
From the old, to the new type five.

The rule-book he must also learn,
The equipment of each car,
So when he takes the final test
He's sure to get a star.

While all of this is going on,
He gets three "bucks" a day.
He's a lucky lad to learn a job
While drawing down his pay.

And now that seven weeks have passed,
They place him at a station,
But he must watch his record still
For he's on three months' probation.

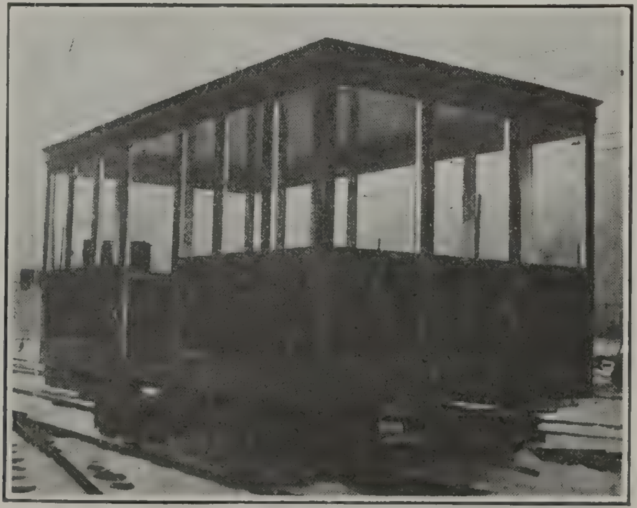
The three months gone, he's "regular,"
And the five months that have passed
Have served to stimulate him
To use safety first and last.

This brief tale I have written
To show why accidents are few,
Each man must have experience—
No other way will do.

A WAITING BOOTH BUILT AT THE MILL

On December 21, 1925, the trustees authorized the construction of a new waiting room for the Massachusetts Avenue Station, with the necessary lighting and auxiliaries. Plans were ready on Dec. 31. To economize time and utilize the facilities of the mill, the booth was built at the George Street Yard, complete with settees, hardware, wiring for lights, etc. It left the yard on a flat car at 12.45 a.m., Jan. 13, 1926, and arrived at Massachusetts Avenue a half-hour later. It was opened to the public early in the morning of Jan. 14.

This procedure eliminated the sending of men and materials to Massachusetts Avenue, where they would have been in the way, and undoubtedly expedited the work.



Waiting booth en route from George Street Yard to Massachusetts Avenue

CHANGES IN THE RESERVE FUND

Fiscal Year 1924-25				Fiscal Year 1925-26			
July 1, 1924, $1,000,000				July 1, 1925, $1,000,000			
July	$353,245.79*	Jan.	$269,649.08†	July	$249,477.93*	Jan.	$223,301.90†
Aug.	445,820.47*	Feb.	118,183.05†	Aug.	367,593.94*		
Sept.	207,334.30*	Mar.	211,955.71†	Sept.	176,763.97*		
Oct.	36,155.55*	April	130,636.68†	Oct.	117,703.96†		
Nov.	15,031.47†	May	139,081.44†	Nov.	45,265.00†		
Dec.	152,527.52†	June	25,792.94*	Dec.	289,347.71†		
Profit and Loss.......$ 51,865.43							

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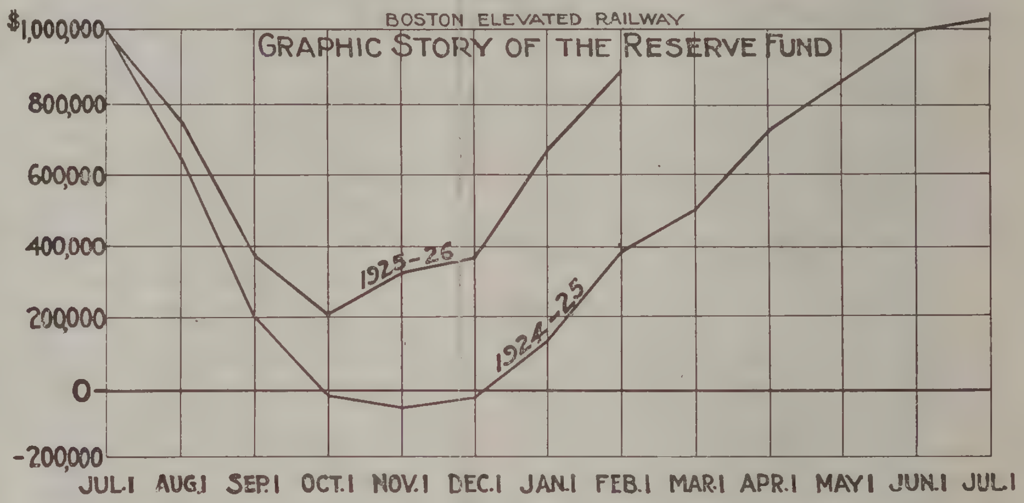
†Excess of revenue over cost of service. *Excess of cost of service over revenue.



JANUARY OPERATION

GENERAL FINANCIAL DATA	1926	1925
Revenue exceeded cost of service	$223,301.90	$269,649.08
Operating revenue per car-hour (A.E.R.A. std.)	$6.15	$6.25
Operating revenue per car-mile operated	64.09c	65.27c
Average fare per revenue passenger	9.231c	9.186c
Ratio operating expense to operating revenue	67.17%	65.83%
PASSENGERS CARRIED		
Revenue passengers	33,144,528	33,305,311
Per cent 5c and 6c passengers	18.63%	19.49%
Revenue passengers per car-mile operated	6.804	6.973
OPERATING FACTS		
Trips operated	635,193	606,938
Car-miles operated:		
Rapid-transit lines	1,258,980	1,290,266
Surface, two-man	2,100,618	2,261,585
Surface, one-man	1,193,843	1,090,984
Express, newspaper and sprinkler cars	6,513	6,875
Motor bus	311,407	126,571
Total miles operated	4,871,361	4,776,281
ACCIDENT DATA		
Accidents per 10,000 car-miles	2.28	2.30
Accidents per 10,000 bus-miles	5.96	5.06
Revenue passengers carried per accident	27,078	29,340
Average number of witnesses per accident	3.28	3.26
COMPLAINTS AND DEFECTS		
Complaints in regard to car service	26	28
Employees complained of by car riders	118	136
Car defects reported per 10,000 car-miles	5.5	8.9
INFORMATION ABOUT POWER		
D.c. kw.-hr. output gross for month	27,727,680	29,251,555
Maximum kw. load	85,900	85,660
Tons of coal consumed	24,066	25,445
Lbs. of coal burned per d.c. kw.-hr at cars	1.949	1.953
Operating and maintenance power cost, incl. depr.		
Per d.c. kw.-hr for car service	0.856c	0.835c
Per revenue car-mile	4.87c	4.96c
Kw.-hr. per revenue car-mile	5.696	5.939

February 20, 1926. EDWARD DANA, *General Manager.*

ALLIED PRINTING TRADES UNION LABEL COUNCIL BOSTON 81

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BOSTON ELEVATED RAILWAY
CO-OPERATION

Volume 5 MARCH, 1926 Number 3

1926 Elements of Success

SAFETY

In our modern life with its speed and congestion it is our duty to preach and practice safety, not FIRST but ALWAYS. This involves four outstanding elements to which attention may well be given:

SAFETY means being careful, and being careful may save human life and prevent suffering. What effort can possibly give a greater return?

SAFETY means that if the annual cost of accidents can be lifted from the car riders, better service can be rendered with this money.

SAFETY means insurance against unhappiness, for no one can witness a harrowing accident, with all the suffering it entails, and be happy.

SAFETY helps to strengthen the individual. One who can practice safety can accomplish other tasks well.

If accident prevention is to be effective, safety must be looked upon, not as good for the other fellow but an absolute necessity in the conduct of our own acts. Remember: "Eternal vigilance is the price of safety."

SELLING OUR SERVICE

Salesmanship is that quality which helps to build success.

You enter a grocery store and inquire for a certain article. It may happen that, due to an unprecedented demand or delay in delivery, the store you enter is not supplied. Even if you show irritation because of this fact you are pretty certain to be treated with courtesy, and regret will be expressed that the store cannot satisfy your wants; in short, an honest effort is made to hold your trade and good-will. The men on the platforms of cars ought to conduct themselves toward patrons in exactly the same way.

Why not get more pleasure and satisfaction out of the daily grind by realizing that this is our business—no one else's? If we can encourage greater use of our service, our business is more successful. We all know what the difference is between a successful business and an unsuccessful one.

We must have rules and schedules, of course, but those who are delivering the service to the patrons are the men on the platforms. If they merely go through the motions of a day's work and give no attention to attempting to work out of difficulties or explain them and to take an interest in the people who support the very institution they work for, how can the business grow?

NEW BADGES AND CAPS

Arrangements are now being made to change the badges of conductors, motormen and operators. This change will do away with the present breast badge worn by operators of 1-man cars. On the same date (to be selected later) the present regulation cap will be reduced in height, and conductors, motormen and operators will be provided with caps conforming to the new regulations.

Concrete Wash Basins in Locker Room at Lotus Place Car House

A FINE NEW CAR HOUSE

The first unit of our new Lotus Place car house was put in operation on Jan. 18. It is one of two units under construction, and has a capacity for eighteen large cars over the pits. The main portion of the building is 45 ft. wide by 335 ft. long. It contains three tracks, connected on both ends to the yard for through operation.

Attached to, and a part of this main portion, is a side building, 21 ft. by 335 ft., containing workshops, blacksmith shop, stockroom, pit-foreman's office, toilets and locker rooms.

This unit is probably one of the most complete car-inspection and repair shops in the country. It is of fireproof construction throughout, with automatic fire sprinklers. It is equipped with two modern car-body hoists, each served at either end with a 5-ton jib crane and electric hoist for handling truck repairs. There are also two 2-ton cranes, which operate in the main section, and into the workshop and blacksmith shop. Provisions have also been made for the installation of two future car-body hoists when the entire repair car house is enlarged to such capacity as to require them.

The work now under way includes another unit of eighteen cars capacity over the pits, making a total of thirty-six cars in the two repair units. It is also proposed to build a third 18-car unit at some future date.

The pit-foreman's office is so located that he has a clear view of the entire first repair unit. The stockroom, blacksmith shop and workshop arrangements are very convenient for work on the cars. Adequate lobby facilities are provided for the workmen, including proper toilet accommodations.

The pit construction is of steel, with concrete pit floors, well drained. The rails are welded to the steel pit structure with standard clips. The upper floors are of concrete, with leg holes between the track girders and the walks, to facilitate inspection work on the cars. Part of the upper walks is depressed below the top of the rail, to permit convenient inspection of the under parts of the cars.

The building is heated by direct steam, supplied from our Forest Hills heating plant, on Washington Street. It is adequately lighted, and painted in light colors to give the best results in illumination.

Provision has been made for excellent distribution of daylight, through a series of windows in the outside walls towards Stony Brook and a number of large skylights.

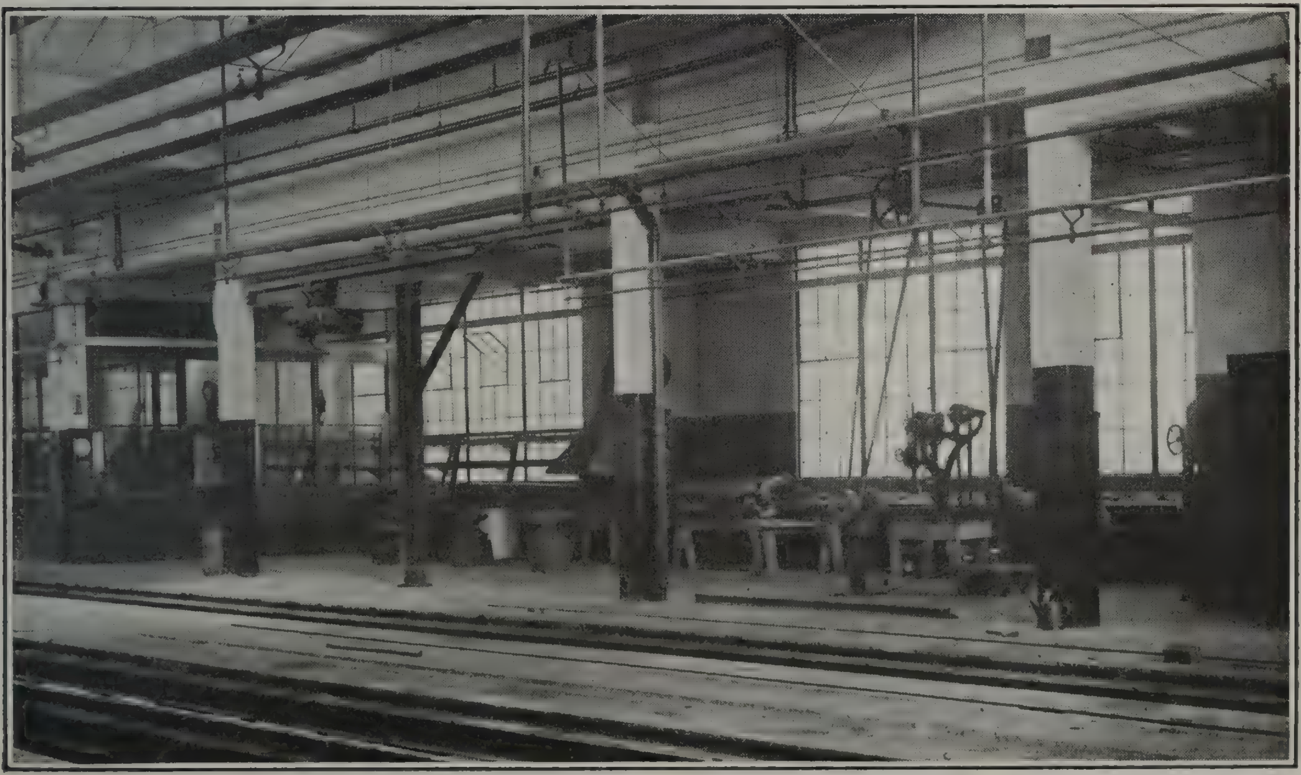
Shortly after the new building was first occupied work was started on the removal of the remaining portion of the old car house, and construction of the second unit was started.

During the early part of next summer, the entire present two units will be completed, the old building will be out of the way and the yard tracks will be connected up, in accordance with our program for development of this station.

OUTSIDE DIMENSIONS OF ELEVATED CARS

The following table gives some interesting information regarding the length and width of the several types of cars used on the Elevated system. The dimensions given are overall values:

Type of Car	Length	Width
No. 1 Semi-Convertible	44 ft. 8¼ in.	8 ft. 6 in.
No. 2 Semi-Convertible	45 ft. 10¾ in.	8 ft. 6 in.
No. 3 Semi-Convertible	46 ft. 2¾ in.	8 ft. 6 in.
No. 4 Semi-Convertible	48 ft. 3½ in.	8 ft. 9½ in.
No. 5 Semi-Convertible	45 ft. 0 in.	8 ft. 6 in.
Cen. Entrance Motor	48 ft. 9½ in.	8 ft. 8¾ in.
Cen. Entrance Trailer	48 ft. 2½ in.	8 ft. 8¾ in.
No. 4 Semi and Trail'r	97 ft. 6 in.	8 ft. 9½ in.
26 ft. 6 in. Box	38 ft. 3 in.	7 ft. 10 in.
25 ft. Box	34 ft. 11 in.	7 ft. 10 in.
Birney 1-Man	28 ft. 0½ in.	7 ft. 8 in.
Cambridge Subway	69 ft. 2½ in.	9 ft. 6 in.
Elevated No. 8	46 ft. 7¼ in.	8 ft. 7 in.
East Boston Tunnel	47 ft. 3 in.	8 ft. 6¼ in.



SUCH CAR HOUSES AS THIS FACILITATE MAINTENANCE

"BOSTON FIGURES DESERVE CAREFUL STUDY"

Under the above caption the "Electric Railway Journal" in its issue of Feb. 27 discusses the last annual report of the trustees of the Boston Elevated Railway. The editors' views are as below:

"Lightly to pass over the record of the Boston Elevated Railway for 1925 as disclosed by the digest of the annual report in the issue of the JOURNAL for Feb. 13 would be a mistake for others engaged in the work of the industry. That report as presented by the public trustees to the state reflects not only the record of the road itself, but it contains in its statistics many unit figures that are of immeasurable value for comparative purposes. Of the value of these to him each reader must judge for himself. Aside from all this, however, there are certain points which should perhaps be emphasized.

"Of particular interest is the attitude of the company on the matter of buses. The management is ready to furnish bus service wherever it appears desirable to do so. It might at first be thought that this was only a generality, but that is not so when the record of increase from 63,937 bus passengers in 1922 to 2,472,456 passengers in 1925 is considered. The chartered bus is also becoming a factor at Boston. Of interest, too, is the plan made for parking automobiles outside of congested centers and inducing their users to journey into the city on the car lines. Particularly proud are the trustees of the record that shows that only 12.7 per cent of the passenger cars now in service on their lines are more than twenty years old compared with the fact that of the 82,340 cars in the United States in similar service 34 per cent are of greater age. The accident record also reflected the intensive work that is being done to decrease the hazard to the passenger.

"One of the saving features at Boston is that a broad discretion is vested in the trustees to change the rates of fare when necessary, but their acts are subject at all times to the principle of service at cost. True, $2,327,816 is due to the cities under the provisions of the public control act that if in any year the established rates of fare do not meet the cost of service and the reserve fund of $1,000,000 is used up, then any loss above that amount will be paid over by the state to the trustees. Any such amount paid by the state is assessed upon the cities and towns in which the lines are operated in proportion to the number of persons in such cities and towns using the service at the time the payments are made by the state. If, in later years, receipts exceed the cost of service, any amount in the reserve fund in excess of the $1,000,000 with which it was started is paid over to the state to be repaid to the cities and towns until any assessments have been repaid. Thereafter, any such excess remains in the reserve fund until needed to meet the cost of service. Fares are then to be reduced as described above.

"These are terms that have been stated many times before. Sight should not be lost of them in any study which is made of the mass of data contained in the report of the trustees as presented to the Legislature."

HURRY, WORRY AND FEAR

The following suggestions are from a leaflet entitled "Business Chemistry," which is issued every little while by Skinner, Sherman & Esselen, Inc.

"Reading Burnham's 'The Normal Mind' recently we came upon some paragraphs which we wish might be worked into the life philosophy of every man and every woman.

'Riggs has formulated an excellent code of rules in substance as follows:

'Be efficient in what you do. . . . In short, do not drive your tacks with a sledge-hammer. There is a better, less fatiguing way. Find out how easily you can do things well, and take pride in such skill.

'Do not accept hurry as a necessary part of modern life. . . . Quality of work, not quantity, spells success, and quality is destroyed by hurry.

'The worst enemy of efficiency, as well as the best ally of nervousness, is worry. Worry is a complete circle of inefficient thought whirling about a pivot of fear. To avoid it, consider first whether the problem in hand is actually your business. If it is not turn to something that is. If it is your business decide next whether it be your business now.

'Lastly, to avoid breaks in character, breaks between your ideals and your everyday actions, recognize that your problem is fundamentally the same as everyone else's, no matter what your particular job may be. . . . Do not criticize your part in the play, study it, understand it, and then *play* it, sick or well, rich or poor, with *faith*, with *courage* and with proper *grace*.'

"Why not clip this out and slip it in your pocket-book, to read every time you get a hurry, worry or fear complex?"

CORPORATE AND OPERATING ORGANIZATIONS†

By L. R. Nash

THE ways in which business is carried on have gone through the same sort of evolution that is seen in every activity of life. Originally business was an individual proposition, each man providing wholly for his own needs and those of his family from the resources of nature. Then he learned to produce more than he needed of something which his neighbors wanted. He sold this or bartered it for something else that they made, which he in turn wanted. As business become more specialized, individuals could not handle all of the details of efficient production and trading. So the next step was to organize partnerships.

Partnerships

A partnership is an association of two or more individuals, pooling their funds or stocks of goods, and sharing profits in proportion to their interests. This is a simple and convenient way of doing business, and fully half in number of the manufacturing concerns in the country are still partnerships. The objection to these partnerships is that each partner may be held liable for any liabilities of the firm. In a large business that is a burden which an individual does not usually like to assume.

Further, if one partner in a partnership dies, the business automatically winds up, the profits have to be distributed and the business has to begin once again.

Corporations

To overcome these limitations of the partnership, *the corporation* was invented. The corporation is not a collection of individuals like the partnership; it is in itself a legal entity. It is owned by the stockholders, the degrees of their ownership being proportional to the proportions of the shares which they hold. No stockholder is responsible for the debts of the corporation, the responsibility of each stockholder being, in general, limited to his investment.

Some people have an idea that a corporation is essentially mercenary, without thought for the rights of others and with as little regard for legal restraints as its attorneys can defend. Although some corporations have shown such characteristics, they have not done so to any greater extent than individuals. In fact, it is harder for a group of business men to agree to do wrong than for one man to resolve to do so. In general a corporation will do business more squarely and honestly than an individual under similar conditions.

Corporations were originally created in most states through special acts of the legislatures. Nowadays the secretary of state in most cases is authorized to grant charters to groups of individuals who petition therefor, the petition stating the purpose for which the proposed corporation is organized, the kind of business which it intends to do, the amount of capital which it proposes to issue, the initial directors or officers and other details. The control of, and responsibility for the acts of a corporation must lie in a board of directors chosen by the stockholders, who respectively cast as many votes as they hold shares of stock.

The Officers of a Corporation

The board of directors, of three to ten or more persons as specified in the application for a charter, elects officers to carry on the work of the corporation. There are a president, one or more vice-presidents, a secretary, a treasurer and sometimes others.

The president is usually charged with the responsibility of carrying out the policies of the board of directors. They tell him how they want the business done, and he conducts it in that way. Sometimes the board has a chairman other than the president, who acts as an intermediary between the board and the officers, and sees that the broad policies of the directors are carried out.

A vice-president fills the president's place in the latter's absence. Where large corporations have several vice-presidents, each may have a separate function, such as the management of the property, of the legal department or of the finances.

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†Abstract of lecture delivered before the employees of the Boston Elevated Railway, under the auspices of the Massachusetts Department of Education, Division of University Extension.

The secretary is the custodian of the corporate records. He performs such duties as keeping minutes of meetings of the directors and the stockholders, certifying to the correctness of corporate papers, and preparing annual reports to state and other authorities.

The treasurer is responsible for funds and other valuable property, such as securities, which the corporation may own. In small corporations he may also do the accounting or have it done. In large corporations there may be a comptroller, who sees that proper accounting methods are developed and used. It is logical, but not usual, for him to keep the accounts. Usually this is done by the auditor, whose more logical duties are in making periodical checks of the accuracy of accounting records. Most large corporations have independent audits made once a year by certified public accountants. In such a case the auditor is really not such, but is the accounting agent of the corporation.

The Operating Department of a Corporation

At the head of the operating organization there is usually *a manager* who, in a large corporation, may be a vice-president. He is charged with the operation of the business as distinguished from its corporate affairs.

Under the manager are subordinates in charge of departments of which the following are the most important departments in a utility organization.*

The mechanical or detail work of operation is in immediate charge of *the general superintendent.* On an electric railway he is responsible for transportation service; in electric light and power systems he sees that the product is generated and delivered to the customers.

The accounting department, in charge of the accounting officer, does the detail work of accounting. This officer is responsible to the manager for the accuracy of his work, although responsibility for accounting practice and results may rest with the auditor or comptroller.

In a large corporation there is *an engineering department* for the design of track, power stations, substations, etc., and for the estimation of rolling-stock requirements.

In most utility organizations there is a *commercial department,* which on an electric railway is concerned with the stimulation of traffic. In some cases this means getting freight, as well as passenger business; and operating amusement parks.

The legal department, as an operating matter, is concerned principally with claims, which on electric railway properties require a substantial part of the revenues.

On large properties, *a purchasing department* is charged with the duty of procuring the necessary supplies after obtaining competitive bids and studying market conditions.

Large companies are coming more and more to have *public relations departments.* Their duty is to inform the public of the real situation as to public utility operation. This information includes what the company is earning, how much money it requires from investors, how much has to be paid for that money, etc.

Subsidiary Organizations Under the Department Heads

Each of the department heads reporting to the general manager has a subsidiary organization. If all of the operations of an electric railway are in the hands of a superintendent he will have a number of activities which he must assign to such officials as the following:

1. *A superintendent of transportation,* with his assistants for each operating division.

2. *A superintendent of power,* who is responsible not only for the operation and maintenance of the power supply system and, through the purchasing agent, for the fuel and other operating supplies, but also for the distribution lines, transmission lines (in some cases),

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*The heads of these departments are about as many subordinates as should report to one man if he is to receive and consider reports from them daily, and discuss their problems with them. In addition to this work he must constantly study the reports of the financial condition of the property and keep in touch with business conditions and with important people.

feeders to the trolley wire, and the trolley wire itself. Sometimes the distribution and trolley systems are in the hands of another official.

3. *A master mechanic*, whose business it is to keep the rolling-stock in order. On a large system he has assistants for each of the shops and carhouses that may be distributed over the property.

4. *A roadmaster*, who takes care of the track.

5. *A superintendent of parks*, in case the company operates amusement parks.

It is not likely that in any one organization the set-up will be exactly along the lines indicated, which is for a property smaller than the Boston Elevated Railway. The organization must always be fitted to the men who are going to do the work.

Securing Co-operation in the Organization

In an efficient organization the responsibilities of the officials are carefully defined in order that loose ends may not lead to unsatisfactory service or accident. Sometimes, even then, differences of opinion arise. A car runs off the track. The transportation department says this was due to a poor piece of track, whereas the roadmaster attributes it to a careless motorman. In a collision the transportation department says that the brakes were in bad order, while the master mechanic says that they were carefully inspected and adjusted. Occasional staff meetings are useful in preventing such conflicts of opinion.

The employees who meet the public ought to understand the problems of the business and be able to talk them over intelligently and sympathetically with the public.*

Centralized Management of Corporations

A type of organization has been developed within recent years which ties corporations together. It is known as a "*holding company*." By ownership of controlling stock interest in a group of similar or related corporations it brings them under unified supervision.

Holding companies are of two types, "vertical" and "horizontal." The former is a chain of industries fitting into each other, like the United States Steel Corporation. This corporation through subsidiaries controls mines, furnaces, rolling mills, etc., and a selling organization.

The "horizontal" holding company has subsidiaries doing small businesses in different localities. This type is common in the utility field, probably more than in any other. More than 75 per cent of the property used in public utilities in this country is operated through holding companies.

The holding company is advantageous in the utility field because the wide distribution of its properties provides stability through the diversity in the classes of business and industry that are served. Adversity in one section is apt to be offset by prosperity in another. Again, the holding company is able to maintain high-class engineers and attorneys, whose services are available to the subsidiaries. It can also insure better prices than the individual companies could get.

Still another form of organization for insuring economical operation is "*centralized management*." This is for administrative service rather than management. It furnishes centralized supervision, engineering, purchasing, legal and other technical service, for a fee. It provides operation of properties which may be widely scattered and which may have no financial connection.

The disadvantage of the holding company is that when a subsidiary has once been bought it cannot free itself from the holding company which owns its securities. This is not true with the centralized management, but the latter does not give the same diversity in operations and the stability in the return to investors as the holding company. It does, however, furnish skilled supervision.

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*An excellent book along this line is "Winning the Public," by Samuel M. Kennedy.

Other helpful references on organization are the following:

"Applied Business Finance," by Dr. Edmund E. Lincoln, statistician Western Electric Co. Chap. 4 deals with corporate organizations.

"Some Problems in Current Economics," by M. C. Rorty, president Bell Telephone Securities Co., and American Statistical Association.

THE NEW YORK BUS SITUATION

In order that Boston Elevated employees may be able to answer questions regarding recent developments in New York, they need to know the following facts:

Submission recently of a plan to substitute buses, at an increased fare, for 200 street cars in New York, which have been unprofitable under a 5-cent fare, has led to erroneous conclusions. The chief of these is that "this proposal marks the beginning of the end of surface lines in New York City."

The facts do not warrant this assumption or anything like it. What has happened is simply this:

For some years the New York Railways has been operating street cars on the twenty-five miles of track involved at a loss under the 5-cent fare. Recently it made an arrangement with the Fifth Avenue Coach Company to make a proposal to the city that buses be substituted, under a 5 and 10-cent fare arrangement, for street cars on the present unprofitable 5-cent lines. The short crosstown rides would be 5 cents, but the longer up-and-down-town rides 10 cents.

Compared with the city's total riders, the number affected by the proposed change would be small. Passengers carried on the 200 cars in 1925 represent about 4 per cent. of the city's surface lines total of 1,035,977,724 revenue riders. This is 36 per cent of all electric railway passengers. Subway and elevated lines carried 62 per cent, or 1,680,800,254 passengers.

Various individuals and groups have hailed this proposal as marking the obsolescence of the trolley. It is nothing of the kind. This suggestion is simply another move to carry out the definite policy of the American Electric Railway Association and the local transportation industry generally.

That policy is to render service either by electric railways or buses and particularly to supplant non-paying lines with buses at a rate of fare which will insure fair earnings.

There have been similar replacements proportionately as great elsewhere in the past, but invariably the electric railway has remained the backbone of the system.

Incidentally, it always should be remembered that a distinctly local situation exists in New York transportation. Subways provide the backbone of service and all other means of transportation are necessarily of a supplemental character. In most cities the local electric railway property is the main artery of local transportations as the subway is in New York. To talk of doing away with surface lines in most cities is equivalent to talking abandonment of subways in New York. And that isn't being done.

Attempts have been made in London for years to substitute buses for streetcar service. It has failed. When the point was reached where buses were carrying 40 per cent of local downtown traffic, the congestion became so great that it was necessary to eliminate many of the buses.

The "New York Times" summarizes the situation so far as it affects Manhattan Island very clearly in an editorial which says in part:

"There is danger of the opinion establishing itself that the surface car in Manhattan is an obsolescent institution of little practical value, the sooner got rid of the better. In 1925 the surface cars in Manhattan carried 354,000,000 passengers. This was 2,000,000 more than traveled on the elevated lines and nearly half the number carried on the Interborough subway lines. Obviously the surface car is a problem of considerable dimensions.

"From that point of view the question of fares becomes of outstanding significance. The new plan calls for a 10-cent fare on the longitudinal routes. That same fare, it must be assumed, will be asked whenever the extension of the bus routes to the entire city is effected, if ever. If such a fare is justified, it would be a virtual admission that the bus is much more expensive than the trolley car. This would confirm the general deduction from the fact that gasoline power threatens to become more and more costly with time, while electric power tends to develop in the opposite direction. In any case the establishment of a 10-cent fare is not a matter to be lightly disposed of in a community which has fought historic battles over the 5-cent fare in the subways."

Predictions that the trolley is doomed to pass have appeared many times in the past and doubtless will appear in the future. Yet these salient facts stand out:

Bus rides cannot be provided as cheaply as electric railway rides.

Every attempt to motorize a city of over 50,000 persons in this country has failed.

Informed transportation minds everywhere agree that the best local transportation service is provided by electric rail service supplemented by buses.

A TOAST

Here's to the chap of the cheery mood!
He makes the world his debtor,
Who sees that life is very good
And tries to make it better.

—*Boston Herald.*

PRONE-PRESSURE METHOD OF RESUSCITATION

By Edwin W. Bullock, M.D.

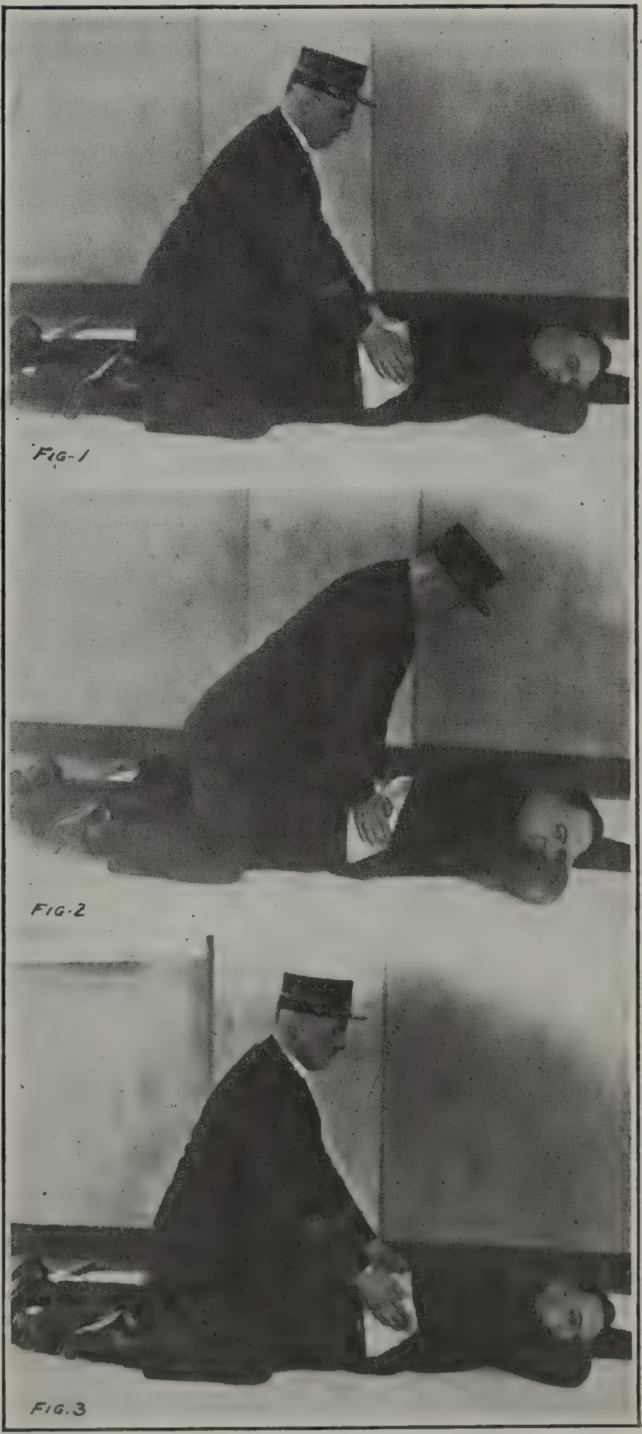
To Be Used in Cases of Drowning, Asphyxiation by Smoke or Gas and Electric Shock

There are three important points to remember in handling these cases:

1. If alone, don't stop to summon help or send for a doctor. Get to work on the victim **at once** before the body gets cold.
2. Work on your patient in the open air unless the weather is extremely cold. If necessary to move indoors on account of cold or storm, open all windows and doors at once and fill the room with cool, fresh air.
   REMEMBER—It is a waste of time and energy to try to resuscitate a person in a hot room where the heat of the room has burned all the oxygen out of the air.
3. Don't stop resuscitation too soon. Keep it up for at least three hours. Don't stop until the body is stone cold, until every particle of color has left the flesh, until every muscle has become stiff and rigid, that is, until **rigor mortis** has set in.

HOW TO GO TO WORK

1. As soon as the victim is "clear" (out of the water, out of the gas or smoke-filled room, clear of the wires or the third rail) quickly loosen all the clothing around the neck and the waist. Sweep your finger around the inside of the mouth in order that you may clear the throat of any foreign body that might have been in the mouth when the accident happened.
2. Turn the patient on his belly, extend the left arm in a line with the body, bend the right arm at the elbow and turn the face to the left with the head resting on the right forearm, so that the nose and mouth will be clear from the ground. (See Fig. 1.)
3. Kneel astride the patient with knees just below the hip pockets, place the palms of the hands on either side of the small of the back so that the fingers will come over the two lower ribs. Keep the thumbs alongside the fingers. (See Fig. 2.)
4. With arms held straight and elbows stiff swing forward so that the weight of your body is gradually brought to bear upon the patient's. As you swing forward repeat slowly: "Out—goes—the—water." (See Fig. 2.)
5. Then quickly release the pressure by making a quick turn of the wrist and swing body back to first position. Repeat slowly as you release: "In—comes—the—air." (See Fig. 3.)
6. Repeat the forward and backward swing of the body and release of the pressure slowly and deliberately fourteen to sixteen times a minute. Time yourself to your own breathing.
7. After the patient begins to breathe, don't stop artificial respiration too soon. Continue until the patient is breathing regularly and strongly. When you move him in, if possible keep up the resuscitation until your destination is reached.
8. When you get the patient home or to the hospital, put him to bed flat on the back with no pillow under his head. Cover warmly and apply heat generally to the body. Give him plenty of fresh air to breathe and keep him **absolutely** quiet. When he is fully conscious and able to swallow you



Inducing Artificial Respiration

can give as a stimulant hot black coffee in small amounts, or aromatic spirits of ammonia, one-half to one teaspoonful in one-third of a tumbler of water, and repeat at 20-minute intervals.

9. If assistance is at hand, first send some one to summon a doctor at once. Have one assistant rub the arms from below upward and, if possible to obtain smelling salts or ammonia, have this assistant pass the smelling salts under patient's nose at frequent intervals. Have another assistant rub the patient's legs, rubbing slowly and deliberately from below upward toward the body. **REMEMBER to keep the body warmly covered at all times.**

POSTSCRIPT BY THE GENERAL MANAGER

Become proficient in this method by practicing on each other. What is there greater than saving a life?

Edward Dana.

ACCIDENT SITUATION IMPROVING

Street car or electric railway accidents showed an encouraging decline in 1924 as compared with 1923, as disclosed in a statistical report made to the National Conference on Street and Highway Safety late in the month of March. The total number of accidents reported by about 40 per cent of the industry was 12½ per cent less in 1924 than in 1923. The number of accidents in relation to the total car-miles also declined. The number involving personal injuries declined 5 per cent. Fatalities in street-car accidents for the United States, as estimated by the Department of Commerce, declined by 170 in 1924, or 8½ per cent, although greater in number than in 1922.

Approximately one-half of the street car accidents reported were due to collisions with motor vehicles. This proportion was slightly greater in 1924 than in 1923. The increase was not due to an increase in the number of automobile accidents, but rather to the greater decreases in the number of other classes of accidents.

THE RIGHT ATTITUDE OF EMPLOYERS AND EMPLOYEES TOWARD EACH OTHER

By **A. J. DAVIS,**
Foreman of Inspection, R. T. L.

Every person in an organization has responsibilities toward that organization. Each employee exercises some function of management. The ideal can be be express thus: "All for one and one for all."

As the greatest relation in human life is that of the family, where kinship, affection and independence are the factors, so some element of the family spirit should be exemplified in business if it is to succeed.

Men in supervisory rank need a winning personality, made up of tolerance, patience, faith, courage, fairness and tact. Under the supervisor come the employees who need to be animated by the spirit of service. Service involves conduct, of the right quality and right quantity. The supervisor must appreciate the ability, character and industry of those whose work he supervises. He must realize that the average fellow is a pretty "good scout" after all.

SOME QUESTIONS ABOUT ACCIDENTS

Last fall "Forbes' Magazine" published an article giving information based on a traffic survey in Washington, D. C. The editor asked some questions which the article answered, as follows:

1. At what time of the day are the most pedestrians hit by automobiles? Ans. 8 to 9 p.m.

2. At what time of the day do the most automobiles strike fixed objects, such as hydrants and trees? Ans. 11 to 12 a. m.

3. At what time of the day do the most automobiles collide with other automobiles? Ans. 5 to 6 p.m.

4. What are the average overall rates of speed, to and from

work, of street-car, bus and automobile riders whose daily trip is (a) 2 miles or less? (b) 2 to 6 miles? Ans. (a) 4.1, 4.5 and 5.7 miles per hour. (b) 7.2, 7.5 and 10.6 miles per hour.

5. What does riding cost per mile for the average street-car, bus and automobile rider? Ans. 2.44 cents, 3.66 cents and 5.85 cents, respectively. The cost with taxis is 23.9 cents.

It is well for a man to respect his own vocation, whatever it is, and to think himself bound to uphold it and to claim for it the respect it deserves.—*Charles Dickens.*

STORRS' DAILY DOZEN FOR ELECTRIC RAILWAYS

2. Exercise Our Imagination

On page 15 of the February issue was printed the first of a series of suggestions for improving the electric railway personnel. In regard to the imagination Mr. Storrs said:

"Let us view the future hopefully and ascertain what it holds for us. The days of trailing in the transportation business are gone. We must lead, we must have vision, we must keep a jump or two ahead of our communities if we are going to prosper."

Education ought to teach us:
To think clearly,
To speak plainly, and
To say the thing that ought to be said.

COMPLAINTS FROM PATRONS

From the reports printed monthly on the last page of CO-OPERATION, it will be noted that a substantial improvement has been made in the item "Employees complained of by car riders." During the period of trustee operation the annual number of complaints has been reduced by 396, or 25 per cent. The records for "Complaints in regard to car service" do not go back far enough to permit comparison, but there appears to be a tendency to improvement here also. Annual totals follow:

Year	Employees complained of by car riders	Complaints in regard to car service
1919	1,595	(No record
1920	1,529	kept
1921	1,421	previous
1922	1,357	to 1923)
1923	1,243	239
1924	1,363	171
1925	1,199	203

A lot of us make the mistake of telling the boss how valuable we are, instead of **showing** him.—*Boston Institute.*

HIGHWAY FATALITIES IN THE UNITED STATES*

The accompanying table gives significant data regarding the relative numbers of fatalities on highways caused by electric cars and other sources of accident. The table is taken from a report to the 1926 National Conference on Street and Highway Safety.

Type of accident	Estimated fatilities			Rate per 100,000 pop.		
	1924	1923	1922	1924	1923	1922
Ry. grade crossing	2,149	2,268	1,810	1.9	2.0	1.7
Street car	1,836	2,006	1,748	1.6	1.8	1.6
Automobile	17,566	16,452	13,676	15.7	14.9	12.5
Motorcycle	274	336	314	0.2	0.3	0.3
Injuries by other vehicles	1,466	1,559	1,655	1.3	1.4	1.5
Total	23,291	22,621	19,203	20.7	20.4	17.6

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*Table based upon reports of the Department of Commerce and the Interstate Commerce Commission. The Department of Commerce compiles statistics of deaths in the registration area, which contained 88.4 per cent of the total population in 1924. These statistics have been used to estimate the total number of highway fatalities in the United States. The Department of Commerce classifies accidents according to the heavier vehicle involved.

CHANGES IN THE RESERVE FUND

Fiscal Year 1924-25				Fiscal Year 1925-26			
July 1, 1924, $1,000,000				July 1, 1925, $1,000,000			
July	$353,245.79*	Jan.	$269,649.08†	July	$249,477.93*	Jan.	$223,301.90†
Aug.	445,820.47*	Feb.	118,183.05†	Aug.	367,593.94*	Feb.	$185,989.63*
Sept.	207,334.30*	Mar.	211,955.71†	Sept.	176,763.97*		
Oct.	36,155.55*	April	130,636.68†	Oct.	117,703.96†		
Nov.	15,031.47†	May	139,081.44†	Nov.	45,265.00†		
Dec.	152,527.52†	June	25,792.94*	Dec.	289,347.71†		

Profit and Loss.......$ 51,865.43

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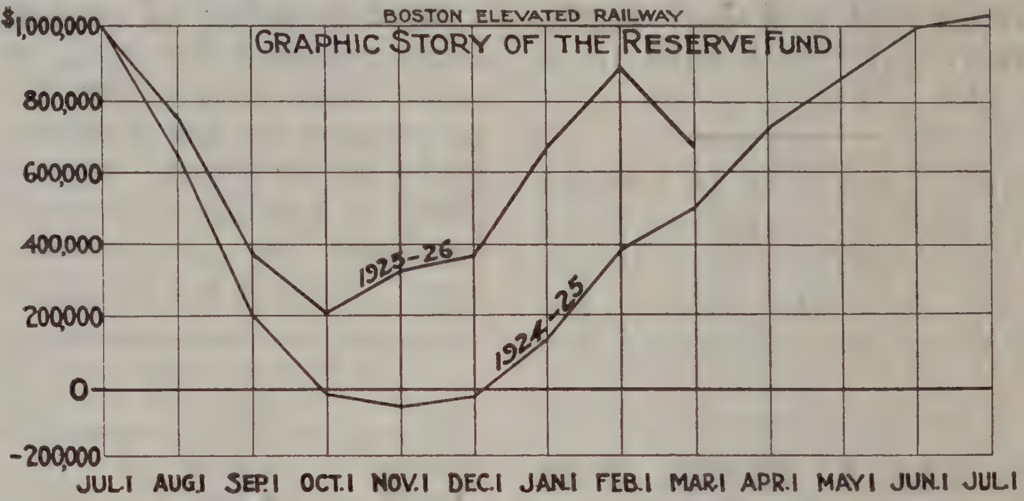
†Excess of revenue over cost of service. *Excess of cost of service over revenue.



FEBRUARY OPERATION

GENERAL FINANCIAL DATA	1926	1925
Cost of service exceeded revenue	$185,989.63	....
Revenue exceeded cost of service	....	$118,183.05
Operating revenue per car-hour (A. E. R. A. std.)	$6.60	$6.21
Operating revenue per car-mile operated	68.98c	64.96c
Average fare per revenue passenger	9.256c	9.200c
Ratio operating expense to operating revenue	78.17%	67.36%
PASSENGERS CARRIED		
Revenue passengers	30,963,854	29,826,343
Per cent 5c and 6c passengers	18.12%	19.21%
Revenue passengers per car-mile operated	7.303	6.927
OPERATING FACTS		
Trips operated	546,890	547,447
Car-miles operated:		
Rapid-transit lines	1,141,322	1,159,192
Surface, two-man	1,791,136	2,031,864
Surface, one-man	1,023,823	982,024
Express, newspaper and sprinkler cars	5,633	5,993
Motor bus	277,635	126,755
Total miles operated	4,239,549	4,305,828
ACCIDENT DATA		
Accidents per 10,000 car-miles	3.38	2.08
Accidents per 10,000 bus-miles	10.1	4.26
Revenue passengers carried per accident	21,560	33,280
Average number of witnesses per accident	3.2	3.3
COMPLAINTS AND DEFECTS		
Complaints in regard to car service	28	15
Employees complained of by car riders	111	103
Car defects reported per 10,000 car-miles	6.7	7.9
INFORMATION ABOUT POWER		
D.c. kw.-hr. output gross per month	26,341,420	22,531,440
Maximum kw. load	82,940	84,580
Tons of coal consumed	22,830	20,130
Lbs. of coal burned per d.c. kw.-hr. at cars	1.945	2.001
Operating and maintenance cost of power, including depreciation:		
Per d.c. kw.-hr. for car service	0.831c	0.972c
Per revenue car-mile	5.17c	4.89c
Kw. hr. per revenue car-mile	6.233	5.036

March 20, 1926.

EDWARD DANA, *General Manager.*

ALLIED PRINTING TRADES UNION LABEL COUNCIL BOSTON 81

BOSTON ELEVATED RAILWAY

CO-OPERATION

Volume 5 APRIL, 1926 Number 4

X9388.7446-5

1926 Elements of Success

WASTE ELIMINATION

The elimination of all waste would result in perfection. The conservation of all expended man hours would spell exact co-ordination of effort. The wise use of supplies, material and time would result in economic conservation.

WASTE is that loss of time or materials for which the car rider pays but receives nothing.

WASTE is the result of that attitude which breeds carelessness and dulls the mental stimulus of work well done.

WASTE is that factor which lowers the standard of living.

WASTE is uneconomic, unnecessary and unfair to to the car riders.

Think in terms of eliminating waste of time and materials in the aggregate and you will quickly appreciate the magnitude of the opportunity that lies before us.

> "Of all the dull dead weights men ever bore
> None wears the soul of discontent
> Like consciousness of powers unused."

ELEVATED VETERANS IN EVACUATION DAY PARADE

The Boston Elevated Railway was represented in the parade which was a prominent feature of the celebration of Evacuation Day in South Boston on March 17. A bus was decorated at the Everett shops with green and white bunting, signs, flags and an eagle. In the parade it carried fifteen senior blue-uniformed men, three from each division, who have seen service ranging from thirty to fifty-five years. The list follows:

Name	Occupation	Date of appointment	Years of service
Jos. F. Daley	Cond.	Aug. 28, '82	44
Edw. Sweeney	M. M.	Apr. 21, '71	55
Pat. W. Manning	M. M.	June 17, '82	44
Edw. Fennerty	M. M.	May 1, '80	46
Patrick O'Donnell	M. M.	June 1, '83	43
Lewis W. Donald	M. M.	June 5, '85	41
William White	M. M.	Aug. 4, '81	45
James Wallace	M. M.	Jan. 12, '86	40
John Nelson	M. M.	Feb. 16, '87	39
Thomas Dawson	M. M.	Apr. 18, '87	39
Jas. W. Forster	Cond.	June 8, '87	39
Philip J. Doherty	Cond.	May 15, '89	37
Michael J. Dolan	M. M.	July 9, '89	37
Andrew S. Thomson	M. M.	May 16, '95	31
Chas. H. Wiggin	M. M.	Oct. 28, '95	30

The history of Boston in the Encyclopedia Americana gives these facts relating to the evacuation: The Battle of Bunker Hill in Charlestown occurred on June 15, 1775. On July 3 Washington arrived at Cambridge and took charge of the American Army, which from that time until the following March kept the British closely within the lines of the siege of Boston. Many of the inhabitants were permitted early to depart. Those who remained suffered hardships and privations, besides witnessing the destruction of much American property, and such scenes of destruction as the use of the Old South Meeting House as a riding school. On the night of March 4, 1776, Washington made his memorable seizure of Dorchester Heights (now South Boston) and on the 17th, Howe with all his army and a large following of American Tories sailed for Halifax. Thereupon Washington entered the city, and even before the signing of the Declaration of Independence Boston ceased to be a scene of active warfare in the long conflict. Yet John Adams, Hancock, and other Boston men bore an important part in the councils of the young nation, in whose army and navy the town was fully represented.

Conspicuous Feature in the South Boston Celebration of March 17

PENSIONERS WHO DIED IN 1925

Thirty-two men whose names were on the pension list died last year. The roster follows:

Name	Position with Railway	Date of Death
Hurley, John	Laborer	Jan. 6
Bridges, Frank	Crossing tender	Jan. 23
Delaney, Edward J.	Gateman	Feb. 4
Commaford, R. H.	Starter	Feb. 4
Cahalin, Henry A.	Motorman	Feb. 9
Forsyth, Henry	Motorman	Feb. 10
Dolan, Peter	Teamster	Feb. 20
Fitzpatrick, Thos. E.	Motorman	Feb. 27
Tribou, F. W.	Cash counter	Mar. 10
Rose, Benjamin F.	Motorman	Mar. 12
Grimley, John	Repairman	Mar. 28
Maddox, Chester H.	Groundman	Apr. 14
Telford, Robert	Gateman	Apr. 19
Cunningham, F. H.	Machinist	Apr. 9
Reed, James	Motorman	May 9
Luther, E. A.	Court assistant	June 10
Irvin, Joseph J.	Motorman	July 2
Daly, John H.	Motorman	July 9
Connors, Wm.	Motorman	Aug. 17
Sheehan, John	Gateman	Sept. 1
Gallan, Patrick	Trackman	Sept. 13
MacKinnon, Wm. L.	Motorman	Sept. 15
Averill, Archie F.	Motorman	Sept. 20
Simmons, Benj.	Hostler	Oct. 11
Stevens, Ora E.	Motorman	Oct. 11
Beattie, Sanford	Stockman	Oct. 14
Schnare, James	Motorman	Nov. 4
Franklin, Samuel	Repairman	Nov. 4
Welch, John	Motorman	Nov. 7
Maxim, George	Blacksmith	Nov. 30
O'Brine, Silas E.	Motorman	Dec. 2
Bailey, Leander	Starter	Dec. 19

ELEVATED'S FIRST AUTOMATIC SUBSTATION

Our Oak Square substation on Washington St., Brighton, has recently been changed from manual to automatic operation, supervised from our South Boston power station.

The equipment at this substation consists of two 13,200-volt, a. c. 3-phase cables, which supply power to two 2,000-k. w. synchronous rotary converters. Power is converted from 13,200-volt alternating current to 600-volt direct current. This is then distributed to the trolley through nine 1,000,000-circ. mil cables. All of this equipment functions automatically on load demand.

The supervisory equipment gives the system operator, who is located at our South Boston power station, approximately seven miles from the substation, control of the opening, closing or locking out of service of any or all feeders and the operation of the rotary converters as desired. All automatic operations at the substation are indicated on the supervisory control board when completed. Only four telephone wires are required between South Boston power station and Oak Square substation for the control and indication of this equipment, as well as wattmeter readings on both units. The supervisory control gives a continuous indication of the position of all equipment at Oak Square substation, checking it at 5-second intervals.

The operation of this automatic substation is based on a system of relays, which, by opening or closing as the load demands, causes the electrical apparatus to operate. These do the work formerly done by operators.

In case of a trolley break or a grounded d. c. cable, the cable on which the trouble occurs is automatically selected and disconnected from the power system and as soon as the trouble is remedied, power is instantly restored to the trolley by the automatic closing of the cable breaker.

When the trolley voltage, as indicated on a meter at the substation, drops to 530, for a period of 30 seconds, the first rotary converter automatically goes into service. It automatically comes out of service when no longer required.

The second converter goes into service when the load on the first converter has reached the safe carrying capacity of the unit, and continues in service until there is only sufficient load for one unit, the second unit then automatically shutting down.

If trouble arises as a result of which the first unit would be seriously overloaded on going into service, both units will automatically go in service at the same time, and if the trouble, such as a grounded direct current bus, load of system, etc., is such that both units would not prove sufficient for the load without injury to the equipment, neither unit will go into service. Likewise, if the rotary converter that is supposed to start first should for any reason fail to do so, the second rotary automatically goes in service in 45 seconds.

With automatic control, the protection given to electrical equip-

This Building Houses Our First Automatic Substation ment is much greater than in the case of manually operated stations where dependance is placed on the alertness of the operator. In the automatic substation, relays are continuously on guard to protect against trouble of any nature. When such troubles occur, the relays operate much quicker than it would be possible for either the hand or brain to function.

The automatic equipment affords protection against starting on single or reverse-phase rotation, a. c. undervoltage, wrong position of brushes, incomplete starting, underspeed, field failure, wrong polarity, reverse power, overheated machine windings, hot bearings, overheating of load limiting resistors, flashover or grounded windings, d. c. or a. c. overloads, overspeed and failure of air pressure.

DOUBLE-DECKERS POPULAR

Double deck buses are now being operated in large numbers in many cities, as follows:

New York	485	Atlanta	15
Chicago	412	Milwaukee	15
Philadelphia	246	Asbury Park	13
St. Louis	215	Washington	9
Detroit	212	Cincinnati	8
Los Angeles	49	Toronto	6
Cleveland	40	Pittsburgh	6
Kansas City	18		

CITIZENS' MILITARY TRAINING CAMP

Major W. F. Harrell, chief army information service, has sent information regarding the camps which are maintained under Act of Congress to promote and stimulate patriotism, and to benefit young men individually and bring them to a realization of what their flag and country really mean. There are four courses, to be taken in consecutive years. Information regarding the courses can be secured at the general manager's office.

ONE-QUARTER OF A CENTURY

Over 16 per cent of our total force, or 1,396 employees, have served the car riders of this community for twenty-five years or more. The numbers by departments are as follows:

Department	Number of Employees
Transportation	892
R. S. & S.	208
Maintenance	178
Power	53
Treasury	35
Claims	18
Bureau of audit	5
General office	3
Legal	2
Inspection	1
Purchasing	1
Total	1,396

THE MAN WHO GETS PROMOTED

By Edgar A. Guest

The ordinary fellow does an ordinary task.
He's mighty fond of "good enough" and lets it go at that;
But the chap who gets promoted, or the raise he doesn't ask,
Has just a little something more than hair beneath his hat.

The ordinary fellow lives an ordinary day,
With the ordinary fellow he is anxious to be quit;
But the chap who draws attention, and the larger weekly pay,
Has a vision for the future and is working hard for it.

He tackles what he has to do with the will to see it through,
He does a little thinking of the work that comes to hand;
His eyes are always open for the more that he can do.
You never find him idle, merely waiting a command.

The ordinary fellow does precisely as he's told
But someone has to tell him what to do, and how, and when,
But the chap who gets promoted fills the job he has to hold
With just a little something more than ordinary men.

From the book, "The Passing Throng," copyright 1923, by the Reilly & Lee Co., Chicago. Reprinted by permission.

Those who take opposite sides on a question cannot both be right but they can both be wrong.—*Indianapolis Star.*

PUBLIC-UTILITY FRANCHISES[†]

By L. R. Nash

A *FRANCHISE* is a right to occupy the public streets in a more or less permanent way. Nobody is permitted to occupy the public streets for private business or to carry on a public business there without a permit. A franchise is issued to a public utility because it provides an essential public service which could not be carried on without occupying, or at least crossing, public ways. Since some use of the streets is necessary, and general use yields lowest cot of service, such general use is permitted.

In the early days of public utilities franchises were granted by acts of state legislatures.[*] In time that process of legislative grants became too cumbersome and the states granted to the cities, through charters and otherwise, the power of granting franchises.

A large part of the franchises now in operation were granted by the cities under delegated authority. The tendency, however, is now the other way, and the states are taking the final jurisdiction over franchises through their public service commissions. The procedure is as follows:

After a local community has decided that it wants a particular public utility, and grants in a preliminary way the rights for such service, then the utility which is proposing to conduct the business goes to the state commission for a "certificate of public convenience and necessity." This is usually granted, unless there is another utility already operating and rendering good service at reasonable rates.

Electric railways, in their franchises, obtain rights for specific locations. They may lay single or double tracks, etc., on designated streets. If later they want to lay additional tracks on other streets a supplementary grant is necessary and this may or may not expire at the same time as the original grant.

Franchises specify that the service shall be adequate and the property well maintained. In many cases the maximum rates of fare or other charges are fixed.

These franchises also usually provide that public utilities shall make extensions of their lines or tracks from time to time, so that people in outlying sections may be served in so far as they can be with reasonable expenditure for the extension and without unduly burdening the property as a whole by heavy losses.

Electric railway franchises contain many features not found in others. Cars may be required to be equipped with fenders or heated to a certain temperature even in the coldest weather. They may be required to be routed and run with such frequency as the city may prescribe. It was a common requirement in the older franchises that the companies should pave the streets between the tracks and for certain distances outside the rails, and repave whenever the pavement was worn out. Some companies are required to sprinkle the streets where their tracks are located, to clean them and to remove the snow. And many of the older franchises specified that the cars should be operated by electric current. The requirements of modern transportation are changing this.[*] Again electric railways are often required to grant trackage rights for the entrance of interurban railways that may be built into the city, to avoid duplication of tracks and unnecessary investment, and for greater convenience.

[†] Abstract of lecture delivered before the employees of the Boston Elevated Railway, under the auspices of the Massachusetts Department of Education, Division of University Extension.

[*] It must be remembered that there are two real sources of government in this country, the nation and the commonwealth. The federal government has jurisdiction over national affairs, and interstate and foreign commerce. The states have jurisdiction over all affairs within their own borders. They may delegate functions to cities, towns and counties. Thus what the state specifically delegates to cities, towns and counties they have a right to do, and nothing else; and the state can withdraw these delegated rights.

[*] For example, a franchise in operation in Grand Rapids, Mich., contains the following:

"That the consent, permission and authority are granted to Grand Rapids Railway Company, its successors and assigns, hereinafter sometimes called the grantee, to continue to operate and maintain a street railway system as it now exists.

. . . and **to supplement or replace the same with vehicles operated by their own power or by trackless trolley or otherwise.**"

Taxing the Franchise and Limiting Its Term

In the older franchises the "*franchise tax*" is frequently found. This was based on the theory that a franchise has value, which it undoubtedly often had when granted for a long term and with few restrictions. To the extent that excess profits over those of ordinary business are possible the franchise has value. The original grantees of franchises sometimes sold them for substantial sums, which apparently justified a tax.

Now, in most states the earnings of public utilities are so limited that the returns that they pay to investors are not higher than the returns which are paid by other investments of similar risks. Under these conditions there is no excuse for a tax.

As to *the term of a franchise*, originally when grants were made by the legislatures there was usually nothing said about the length of time that they were to last. Later those grants have been interpreted by the courts to be perpetual. More recently, cities have granted perpetual franchises, or those running for 99 or 999 years. It is now generally considered that such perpetual or long-term grants are not desirable, because they give the incorrect impression that the public is at the mercy of the corporations possessing them.

In fact, there are state constitutions which prohibit the granting of irrevocable or controlling franchises. Some go to the extreme of limiting the term to 20 or 25 years, which is too short. It is difficult to finance a property which has a short-term franchise. The remedy for this difficulty originated in Massachusetts, namely, *the indeterminate permit or franchise.* This lasts until it is terminated by the purchase of the property by the city. Usually this means that the franchise lasts as long as its holder is rendering good service and attending properly to its business.

That is the ideal arrangement. It implies that public service is going on indefinitely. In Massachusetts. franchises may be cancelled without provision for disposition of the property, but that does not worry anybody because it would be inconsistent with Massachusetts' traditions to destroy property values in that way.

The indeterminate franchise has been endorsed by influential men, and such bodies as the National Association of Railway and Utility Commissioners. This association passed a resolution recommending that state legislatures provide such laws as will make it possible. Where this has not been done or cannot be done, the indeterminate feature can be provided through the granting of franchises which if not renewed, say fifteen years, before expiration allow during their remaining life the raising of rates to permit amortization of the investment.

Another form of franchise which is attracting attention is *the "service-at-cost" franchise.* The first real service-at-cost franchise was that put into effect in Cleveland in 1910, although one embodying many of its features was adopted in Chicago three years earlier. Unfortunately, the Cleveland operation proved to be at less than cost for long periods, because the railway could not give the required service at the cost fixed in the franchise. Fifteen large cities now have service-at-cost franchises, and in others the principle is recognized in whole or in part.

In this type of franchise the attempt is made to adjust fares automatically to the cost of service, and to do it promptly. This eliminates the delays which are often serious under the usual commission regulation. The service-at-cost franchise also enables cities to get the service that they are willing to pay for. Fares are adjusted to cover four things: operating expenses, taxes, provision for depreciation or replacement of property items as they wear out, and a fair return to the investors in the way of interest and dividends.

The return to investors is usually based upon a *valuation* or "capital value" of the property. This may be determined by (1) the actual cash investment, (2) an appraised value, or (3) the outstanding issues of securities where found to be consistent with value. The rate of this return is usually specified. In the first, or Chicago, franchise it was 5 per cent plus 45 per cent of the profits after this 5 per cent and all of the operating expenses, taxes and upkeep had been taken care of, the city accumulating the remaining 55 per cent for the ultimate purchase of the property.

In Cleveland the return is 6 per cent, while elsewhere it is 7, 8, or even 9 per cent. The 9 per cent return, however, is part of a flexible scheme wherein the rate of return varies with the rate of fare in effect.

Where the city supervises closely the railway operations, the operating expenses can be assumed to be as shown by the expense accounts. In Cleveland it was considered necessary to specify the amounts, but the allowances had to be raised several times. The use of a *budget* is more satisfactory. A city official checks the budget for reasonableness, and if the company finds it necessary to over-run the estimate the facts must be clearly demonstrated.

Depreciation, or provision for retirements and replacement, is given attention in nearly all service-at-cost franchises, both as to the amounts which shall be set aside each year and the accumulated funds or reserves which shall be provided. Actual taxes, also, are recognized as part of the cost of service and are allowed.

A final item in the cost of service which is occasionally allowed is provision for amortizing, or writing off, some part of the investment in the property. The value fixed as the basis of return may contain "intangibles" such as franchise value or early losses incurred when the company was building up its business. Franchise value ought logically to be written off within the life of the franchise, but the case is different with the early losses, as will be shown.

In ordinary business it is customary to write off from the capital the losses incurred in starting the business, whenever the profits are sufficiently great to justify this. In the public-utility business it is true that after the first years the operation may become profitable, also, but if then provision were immediately made for the earlier losses, it would mean raising rates or continuing them at so high a level that much profitable new business could not be secured. It also would involve putting a burden on the customers of that period which does not belong there, at least not all of it. The most equitable arrangement seems to be to keep the necessary development costs as an element of value, on which the users of the service are required to pay much less than if they were carrying an amortization charge.

Under the service-at-cost plan the company is entitled to collect, through its fare schedule, an amount which will provide for the costs as enumerated. It is not possible, however, to adjust the fares to the cost month by month, both on account of bookkeeping limitations and the inconvenience of odd fares. Some fund or reserve is necessary to take care of the fluctuations. Thus in all franchises of this type there is provided a *fare-stabilizing fund.* In any month when the revenues are greater than the cost of service the excess goes into this fund, and *vice versa.* If the fund builds up to a maximum limit the fares are automatically lowered, and *vice versa.* No action is necessary on the part of city council or public service commission.

These franchises usually specify what the change shall be when an increase or decrease in fare is made. Some include a certain number of steps, and when the top or bottom is reached and further change is necessary an embarrassment results. The better plan is to authorize the official in authority to establish one or more additional steps whenever the limit is reached. This kind of franchise requires a "supervisor," who is usually appointed by the city, whose business it is to watch the operation and see that the desired service is furnished. He insures the economical use of money, receive complaints from citizens and arranges for the correction of defects by the railway.

In one recent franchise the supervisor is appointed by the state public service commission. He is thus an agent of the commission. Such a plan ties together the prevailing plan of statewide regulation and the scheme of service at cost.

The public service commissions are likely to be jealous of any encroachment upon their rights and duties, and properly so because these are fixed by law. But where a city undertakes to agree with the company that it will be satisfied with a certain value and a certain rate of return, etc., and appoints a supervisor, or secures his appointment by the commission, then the operation is really under a three-party agreement.

As in the indeterminate form of franchise, so in most of the service-at-cost franchises, provision is made for the purchase of the property by the city, usually at the then capital value plus liquidation costs. They also usually omit the paving, street cleaning and street sprinkling requirements of many earlier franchises.

Massachusetts has gone further than the service-at-cost franchise. In 1918 it passed a law authorizing cities and towns actually to help street railways to support lines otherwise unprofitable, up to the limit of $1 per $1,000 of assessed valuation in the towns and 50 cents per $1,000 in the cities. The Boston Elevated Railway Act of the same year goes even further. When the revenues of the Elevated Railway are insufficient to meet expenses, the public trustees who represent the State may call upon the State Treasurer to make up the deficit. He in turn collects the necessary amounts from the cities and towns in proportion to the service furnished. The railway has in this way received nearly $4,000,000 and paid back about $1,650,000. No date for the payment of the remainder has been specified.

Under the Boston Elevated Railway Act the State leases the property from the owners at a fixed rate of return on the valuation. The stockholders and directors of the company have nothing to do with the operation of the property. While this may seem like a radical change from the conventional ways of operating electric railways it is really just one step further in the line of service at cost. Some of the most drastic service-at-cost franchises give the supervisor detailed authority over everything that the company does. The Boston Elevated plan simply goes further in giving over the actual operation as well as supervision to the board of trustees.

The Boston Elevated plan is an experiment which is not duplicated elsewhere. It is being watched outside the State with great interest. One valuable feature is that the trustees are appointed for ten years and hence do not change with political conditions in the city. There is, therefore, every incentive to stability and successful operation.

The application of the principle of service at cost has been made principally in the electric railway field. However, in Boston the Consolidated Gas Company has a somewhat similar arrangement. It has a sliding scale of rates and dividends. As rates are decreased dividends may be increased. A somewhat similar franchise is in operation in Dallas, Texas. These are exceptional cases. In these cases the allowable rate of return is based on maximum service rates. As maximum rates bear no fixed relation to the average rates, it is impossible under this type of franchise to adjust the rate of return with respect to the average service rate. It is, therefore, not entirely equitable.

VISION*

The person with vision is one who recognizes a need or an opportunity, and then begins to think and inquire and investigate, so that the need may be met in the most acceptable way, or the opportunity may be developed, and its development must not be half-hearted, but whole-hearted, in dead earnest.

Everybody who does useful things has vision. Some have a limited vision and others almost limitless vision.

The difference between the successful and the unsuccessful is very largely a question of vision. Millions saw apples fall from trees, but Newton had the vision to see that there must be a reason for it. Millions had watched kites flying in the air, but Curtiss and the Wright brothers began to ask why, and to study how the principle could be applied to something practical, and we have the result in the airplane. Whenever water boiled, there was sure to be steam, but it was left to James Watt to discover its power and harness it for the benefit of the world.

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*From article in the "Professional Engineer" by Major E. M. Miller.

LIVES SAVED BY PRONE-PRESSURE RESUSCITATION

The skill of Boston Elevated employees in inducing respiration by artificial methods was responsible for saving several lives on April 2. A family at No. 9 P Street, near the North Point carhouse, was asphyxiated by coal gas. In response to an appeal for help, Conductors F. J. O'Brien and B. J. Nolan broke in the windows, opened the front doors and admitted Conductor Wm. Crawford and Motorman Owen Keegan. They picked up the unconscious forms of Mrs. Anna Ryan and her five children and passed them out to Station-master F. W. Hanson and Motorman J. McCue. Four children were rushed to the Carney Hospital by Acting-Inspector Michael Hannigan and Conductor John J. Morgan.

Pit-foreman J. J. Donlon applied the prone-pressure method of resuscitation to the apparently lifeless form of an 8-year-old girl and after 15 or 20 minutes she showed signs of life. She was then rushed to the hospital by Thomas Ellis. As soon as Mrs. Ryan was carried out, Motorman Marines DeWitt applied the prone-pressure method on her and in about 15 minutes she revived.

In the meantime Station-master Hanson went to the upper tenement in the building and removed three children who had not as yet been overcome.

The quick action and co-operation of the above-mentioned men undoubtedly saved the lives of Mrs. Ryan and three of her children.

CAR-BODY DAMAGE CAN BE REDUCED

During 1925 the cost of car-body repairs necessitated by accidents amounted to approximately $178,000, or 41 per cent. of the total amount chargeable to car-body maintenance.

If this amount were available for painting our cars how it would help the service. Avoid accidents during 1926 so that revenue can be expended for improvements instead of repairs of damage.

THEN AND NOW

When our patrons direct attention to the 10-cent cash fare in Boston it is well, in addition to explaining why the fare has to be higher than it was ten or fifteen years ago, to call attention also to the following facts:

Formerly we had 5-cent movies; now we sometimes pay up to $2.

Then we could get a square meal for 25 cents; now we pay from $1 up, mostly up.

Then a seven-course French dinner could be had for 50 cents; now it may easily cost $2.50.

Then ice-cream sodas were 5 cents, now they cost at least 15 cents.

Then the doctor charged $1 a visit; now he thinks $3 is low.

Then a good suit of clothes could be bought for $15; now a tailor doesn't hesitate to charge $75.

Then shoes cost $3 a pair; now from $6 to $10 is considered reasonable.

Then you could buy a pair of trousers for $2.50; now you will probably pay $10 or more.

Then you could get board and room for $4.00 a week; now the room alone will cost much more than that.

Then cigarettes were 5 cents a package, with a photograph thrown in; now they are 15 cents or more.

Then those big Sunday newspapers cost 5 cents; now they cost 10 cents.

Then you paid $1.50 for the best seats at the best shows and no tax; now they are three times as much or more.

Then your butcher used to give you liver for your dog; now he charges you well for it.

There is no resentment against paying these higher prices, merely regret that the good old days are gone. Patrons of the railway can readily be shown that the same reasons that apply in these cases apply also to the car fare.

Co-operation is not a sentiment; it is an economic necessity.—*Charles P. Steinmetz.*

RIPENING SERVICE

On this and the opposite pages are reproduced two pictures, one taken in 1895, the other March 20, 1926. The first shows a group of thirteen men in the engineering department, and the second the eight members of the group still in active service with the company.

In order, from left to right, the men are as follows: (1895 picture) Melvin B. Carr, Geo. F. Abbott, Hiram B. Andrews, Walter I. Mather, Benjamin W. Ellis, Horace F. Carlton, Arthur L. Plimpton, James P. Boyden, John W. Owen, Howard T. Manley, Warren N. Pond, E. Wesson Clark and Clarence T. Weaver. (1926 picture)—Standing, Messrs. Mather, Boyden, Owen, Clark and Weaver. Sitting, Carlton, Plimpton and Ellis.

Of the other five men, Mr. Carr died Oct. 25, 1904, Mr. Abbott resigned Oct. 22, 1906, Mr. Andrews resigned Nov. 30, 1904, Mr. Manley resigned March 19, 1896, and Mr. Pond was pensioned Sept. 12, 1925.

> "The Elevated may not be making much money, but it is making good will through the courtesy maintained by its carmen."—Editorial note in Boston Herald, April 2, 1926.

STORRS' DAILY DOZEN FOR ELECTRIC RAILWAYS

3. Exercise Our Faith

Following the plan of printing the series of suggestions for mental exercise prepared by the friend of Walter Camp, inventor of the "Daily Dozen," and for which the Boston Elevated Railway was recently editorially commended by the "Electric Railway Journal," we give this month the third of the series. In regard to faith, Mr. Storrs says:

"We must have faith in our employees and cause a like faith in them for us. Managements and men must work together. If mutual faith does not exist, personnel should be changed to bring it about. It is unfair to ourselves, unfair to our employees and unfair to the public to have inharmonious relations existing on our properties."

EIGHT MEN OF THIS GROUP, PHOTOGRAPHED IN 1895, ARE STILL IN THE EMPLOY OF THE COMPANY

SELLING SERVICE

Mr. Dana sent to F. E. White, chairman of the series of group conferences in "Selling Service," the following letter which was read at the closing meeting on April 20:

"I wish to extend my congratulations to the members of the selling-service class for the interest and enthusiasm which has marked their work this year. I trust that all who have been a party to the course have profited. I am certain that the railway will be better operated because of the study of this most important phase of our service. If the thoughts prepared and discussed can be put into practice at all times, under all conditions, public sentiment in favor of the Boston Elevated Railway's efforts can be greatly cultivated. No more important task confronts this railway than marketing its service courteously, efficiently and in a modern manner. Slipshod, careless, indifferent work in selling service causes criticism, distrust and suspicion of a railway, whereas active interest in the rendering of service brings its own commendation and reward.

"Please convey my confidence in the personnel of the railway to your class tonight."

SIGNS OF SPRING

By Daniel H. Willett
Clerk, Bureau of Audit

The brooks are runing to the sea,
The sun's rays warm the land,
The crocus blooms now, o'er the lea,
Earth smiles on every hand.

The tulips gay shoot forth their heads,
And fill us with delight;
The daffodils from frozen beds
Now seek the warm sunlight.

The robin has come back again,
His sweet notes all attuned;
The bluebird soars with piping strain
On soft south wind, perfumed.

PRONE - PRESSURE RESUSCITATION

Referring to the article by Dr. Bullock on page 33 of "Co-operation" for March, a slight correction should be made in the second item under "How to go to work." The patient's face should be turned to the right, as shown in the pictures, and not to the left, as stated.

Eastern proverb found on the wall of an old mosque:

"You came into the world crying while all around you were smiling; so live that you may go out of the world smiling while all around you are weeping."

THESE BOSTON ELEVATED MEN ARE THIRTY-ONE YEARS OLDER THAN THEY WERE IN THE PHOTOGRAPH OPPOSITE

CHANGES IN THE RESERVE FUND

Fiscal Year 1924-25
July 1, 1924, $1,000,000

July	$353,245.79*	Jan.	$269,649.08†
Aug.	445,820.47*	Feb.	118.183.05†
Sept.	207,334.30*	Mar.	211,955.71†
Oct.	36,155.55*	April	130,636.68†
Nov.	15,031.47†	May	139,081.44†
Dec.	152,527.52†	June	25,792.94*

Profit and Loss.......$ 51,865.43

Fiscal Year 1925-26
July 1, 1925, $1,000,000

July	$249,477.93*	Jan.	$223,301.90†
Aug.	367,593.94*	Feb.	$185.989.63*
Sept.	176,763.97*	Mar.	$161,772.65†
Oct.	117,703.96†		
Nov.	45,265.00†		
Dec.	289,347.71†		

Profit and loss items omitted to end of year.

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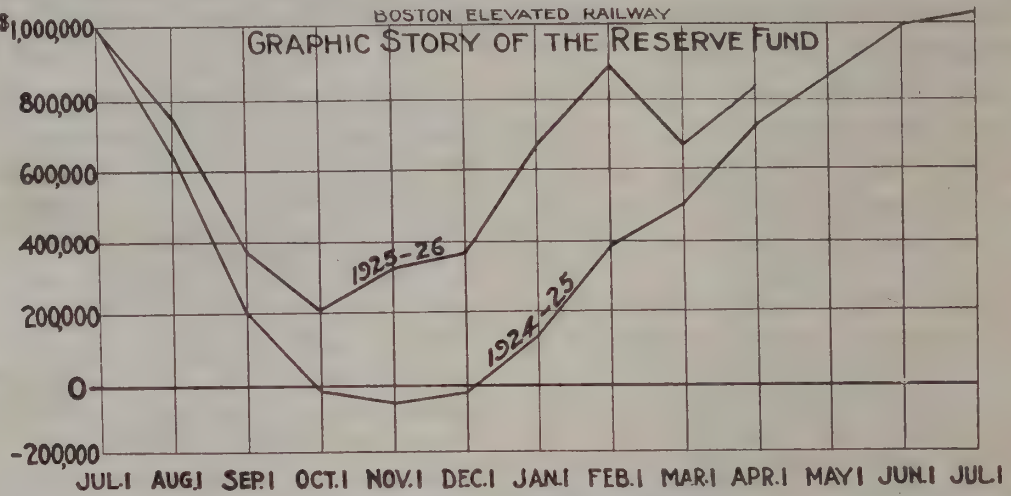
†Excess of revenue over cost of service. *Excess of cost of service over revenue.



MARCH OPERATION

	1926	1925
GENERAL FINANCIAL DATA		
Revenue exceeded cost of service	$161,772.65	$211,955.71
Operating revenue per car-hour (A. E. R. A. std.)	$6.06	$5.90
Operating revenue per car-mile operated	62.94c	63.07c
Average fare per revenue passenger	9.220c	9.199c
Ratio operating expense to operating revenue	69.11%	66.76%
PASSENGERS CARRIED		
Revenue passengers	33,802,662	32,338,441
Per cent 5c and 6c passengers	18.89%	19.19%
Revenue passengers per car-mile operated	6.699	6.739
OPERATING FACTS		
Trips operated	657,949	614,523
Car-miles operated:		
Rapid-transit lines	1,314,366	1,292,024
Surface, two-man	2,173,463	2,206.514
Surface, one-man	1,198,938	1,148.586
Express, newspaper and sprinkler cars	7,241	6,791
Motor bus	351,634	144,832
Total miles operated	5,045,642	4,798,747
ACCIDENT DATA		
Accidents per 10,000 car-miles	2.18	1.88
Accidents per 10,000 bus-miles	4.58	2.42
Revenue passengers carried per accident	28,600	36,500
Average number of witnesses per accident	3.59	3.99
COMPLAINTS AND DEFECTS		
Complaints in regard to car service	13	18
Employees complained of by car riders	121	120.
Car defects reported per 10,000 car-miles	5.2	6.0
INFORMATION ABOUT POWER		
D.c. kw.-hr. output gross per month	26,938,045	22,989,830
Maximum kw. load	82,920	83,000
Tons of coal consumed	23,948	20,565
Lbs. of coal burned per d.c. kw.-hr. at cars	1.996	2.009
Operating and maintenance cost of power, including depreciation:		
Per d.c. kw.-hr. for car service	0.897c	0.976c
Per revenue car-mile	4.83c	4.51c
Kw. hr. per revenue car-mile	5.431	4.622

April 20, 1926.

EDWARD DANA, *General Manager.*

10/8

BOSTON ELEVATED RAILWAY
CO-OPERATION

Volume 5 MAY, 1926 Number 5

1926 Elements of Success

TEAMWORK

First-class service to the patrons of this railway cannot be rendered unless the spirit of team play animates all of us.

TEAMWORK depends first upon the spirit of the organization. A determination to succeed in spite of all obstacles is the prime requisite in solving transportation problems.

TEAMWORK also requires loyalty to the organization. Success is impossible unless all members of the organization pull together for the common good, namely, first-class service to the public.

TEAMWORK next involves a clear understanding of just what the objective is. Each member of the organization must appreciate the goal toward which he is aiming.

TEAMWORK is possible only when there is the fullest knowledge of the problems and of the circumstances under which the problems must be solved.

The Boston Elevated Railway is favorably known for its teamwork. There is ample room for still further improvement. Drop the little point-of-view, adopt the large viewpoint and let all of us resolve, "we intend to make a success of our task and we will contribute our full share to the success of the organization."

NOVEL SNOW PLOW

The snow storms of early February demonstrated to the management of the Boston Elevated Railway the need of some special equipment, not commercially available, to combat a new factor in snow fighting. They found that a deep fall of wet snow, solidly packed over the tracks by heavy automotive vehicle traffic, could not be successfully removed by our present-type snow-plow equipment, if from any cause the rail was lost for any space of time.

To combat this new feature would require more weight, greater power and differently designed shears for pushing the solidified snow from the rails, without danger of derailing the plow, than existed with any plow that we had. Therefore, a new snow plow was designed by the department of rolling-stock and shops, and construction work was rushed in the shop. The plow was soon ready for service, but lack of snow prevented any tryout.

The start was made from two No. 3 semi-convertible cars, which had been withdrawn from passenger service. They are heavy cars with considerable power. How they were altered into a powerful snow plow is shown by the illustrations on the opposite page.

The two cars shown are coupled together semi-permanently, and their combined weight is 160,000 lb., with a motor capacity of 400 hp., which is available for operation in either direction. The snow equipment on one car is a duplicate of that on the other, one set being used when going in one direction and the other when the direction is reversed.

The operation of the plow is as follows:

A nose plow, which is rigidly attached to the front of the forward truck with its point fixed 2½ inches above the rail, cuts into and loosens the packed snow between the rails and throws it to each side of the track. The snow so displaced is thrown still further outside and to the right of the track by a cross shear set at an angle of 37 deg. under the center of the car between the trucks. This shear can be raised and lowered by an air cylinder within the car. It weighs 1,500 lb., and 4,000 lb. more pressure can be added by increasing the air pressure in the cylinder.

To pick up the snow thrown by the nose plow into the strip between the tracks or in the devil strip, a wing projects from the shear, controlled by a pneumatic cylinder which holds the wing down or raises it to pass obstructions.

To prevent removed snow from working back on the tracks, and to provide a clear space for vehicles, a snow leveller is attached to the side of the rear car which takes the snow from the shear and pushes it 12 ft. outside the rail. This leveller is controlled from the car by a winch, which raises and lowers it, and it can be quickly released and swung

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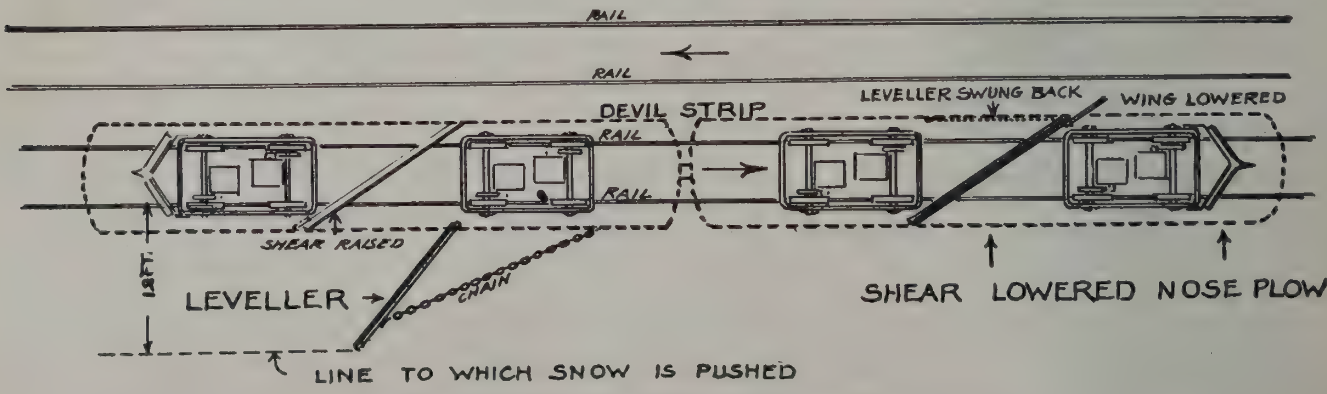


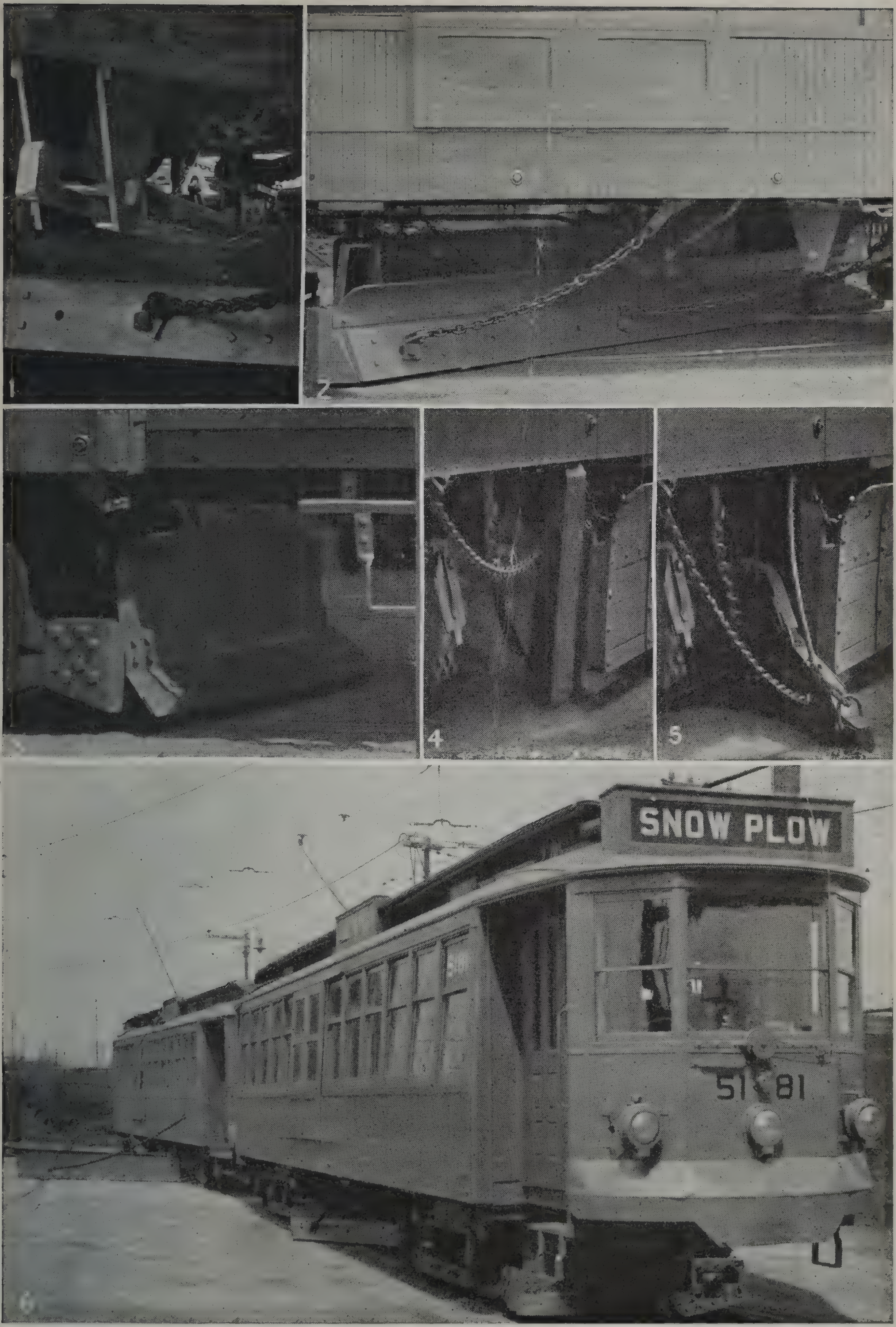
GENERAL PLAN OF THE SNOW PLOW

AN INSPIRING CAREER

C. T. Fernald, chief engineer of the maintenance department, who died on May 11 in his sixtieth year, has been with the Boston Elevated in various capacities more than twenty-six years. He was a native of Charlestown, but after young manhood lived almost continu-

C. T. FERNALD

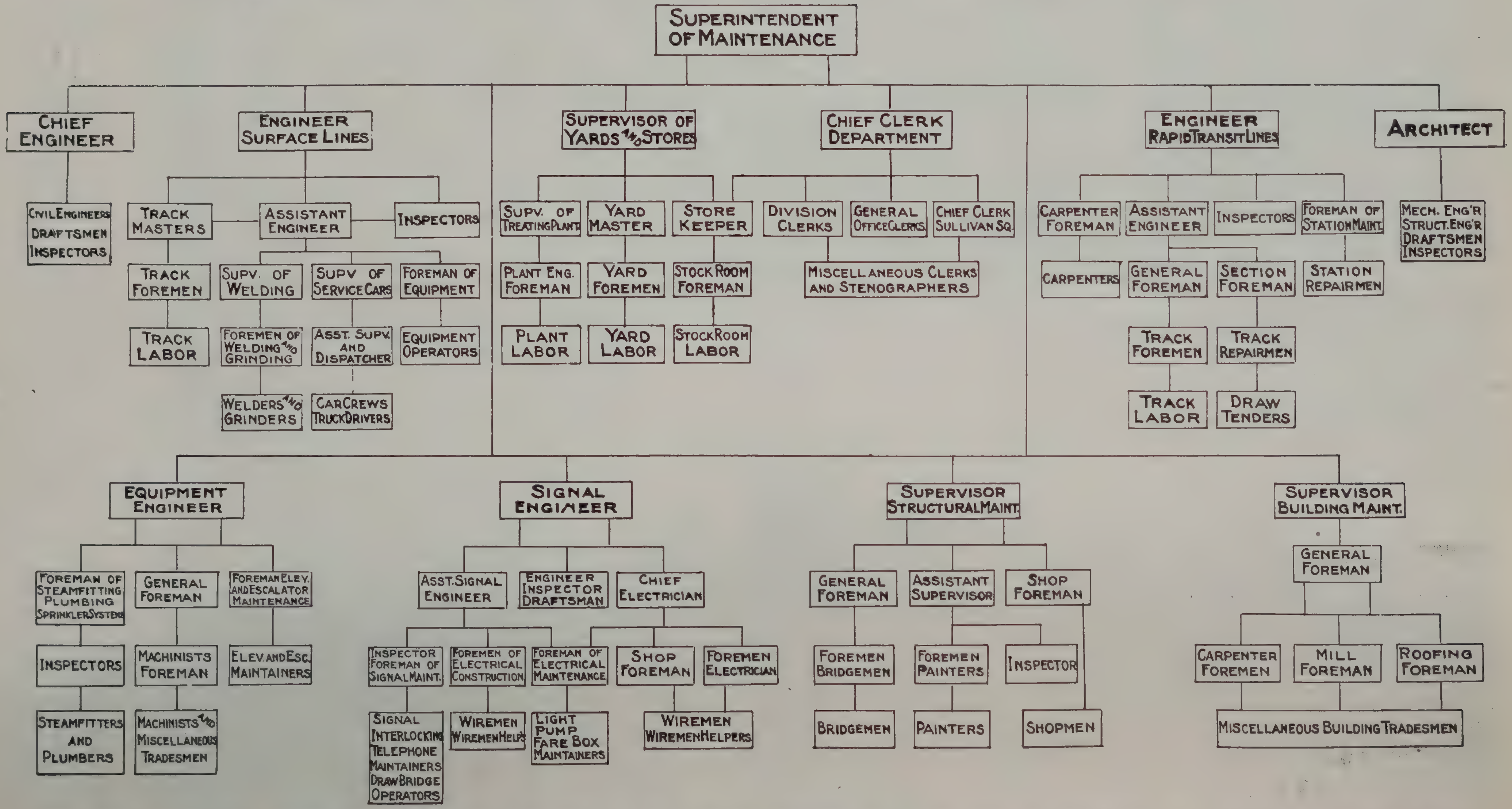
(Concluded on Page 53)



READY FOR NEXT WINTER

Fig. 1, slotted arm for maintaining vertical alignment of main shear. Fig. 2, main shear extending across track at angle of about 37 deg. Fig. 3, nose plow rigidly attached to outer end of end truck. Fig 4, wing on forward end of main shear for clearing devil strip—raised position. Fig. 5, same—lowered position. Fig. 6, general view of plow, showing snow leveller on rear unit in operating position.

ORGANIZATION OF MAINTENANCE DEPARTMENT



This chart is the third in the series begun with the chart of the general organization in the issue for December, 1925. The transportation department chart was printed in the February, 1926, issue.

AN INSPIRING CAREER

(Concluded from Page 50)

ously in Melrose. Here he was identified with public affairs, serving, for example, for four years as a member of the first board of aldermen. He was a member of the Massachusetts Electoral College in the presidential campaign of 1905, being elected presidential elector for the 8th Congressional District. For seven years, until 1918, he was chairman of the Melrose Board of Park Commissioners and was later on the Advisory Committee for the Memorial Building in Melrose.

When but ten years of age Mr. Fernald lost his father, and he had to contribute to the family support which he did by working in stores, selling newspapers, etc. After graduating from high school, while a stock clerk in a wholesale millinery establishment he attended evening high and drawing schools, afterward spending five years in the office of an engineer in Melrose. While in this office he attended the Lowell Institute courses of the Massachusetts Institute of Technology and at twenty-four years of age entered the employ of the Norfolk & Western Railway on preliminary and location surveys. He was with the railway about a year, after which he opened an engineering office in Melrose, and was afterward for six years an engineer for the city. He left this work to join the Boston Elevated Railway on Feb. 27, 1900.

A few years ago Mr. Fernald wrote:

"One of the most instructive periods of my early life was while I was with the Norfolk & Western Railway. We were obliged to travel on foot through the country, meeting all classes of people, many still hostile to Northerners and living under all sorts of conditions. There was also keen competition from the engineers of the Baltimore & Ohio and Pennsylvania Railroads and the new coal railroad (the Virginian), which was being built for H. H. Rogers. These roads were all competing for the best locations for river crossings and alignment through the Blue Ridge Mountains to the coal fields. I tramped many miles through all sorts of country and in all kinds of weather, getting up before daylight to secure these locations ahead of the other survey parties."

A USEFUL ORGANIZATION

As there was no active orchestra on the Elevated system this fall that could be called upon to play on the various occasions when music is needed, in January the Boston Elevated Railway Orchestra was formed. The members' names are given under the accompanying group picture with the exception of that of Frank J. Mazzaro, violinist, who is absent from the group.

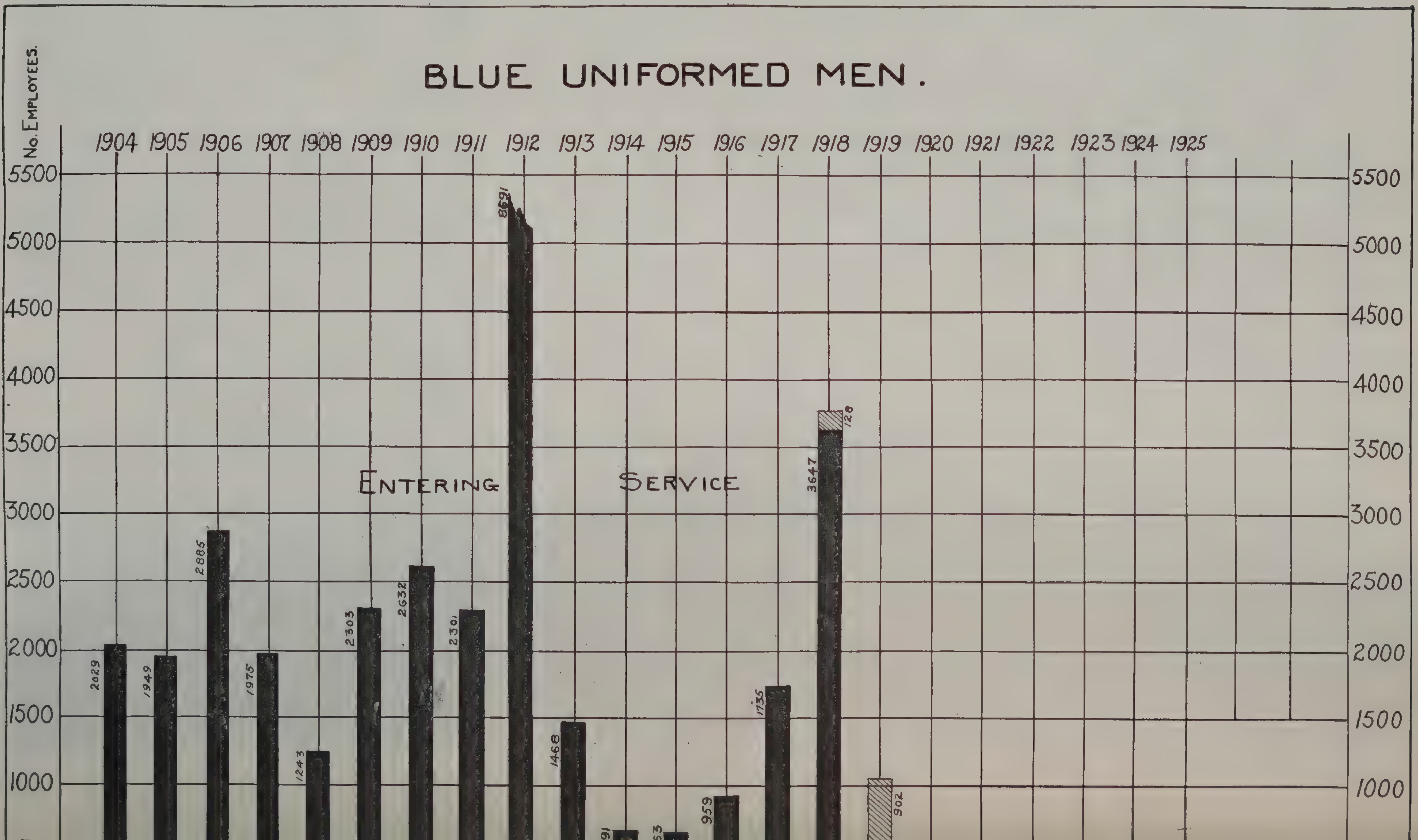
The orchestra's first program was given at a general meeting of the educational classes on Feb. 9 at the Instruction School. This resulted in invitations to play for a dance and for the second general meeting. The time required for all of this was donated by the members of the orchestra.

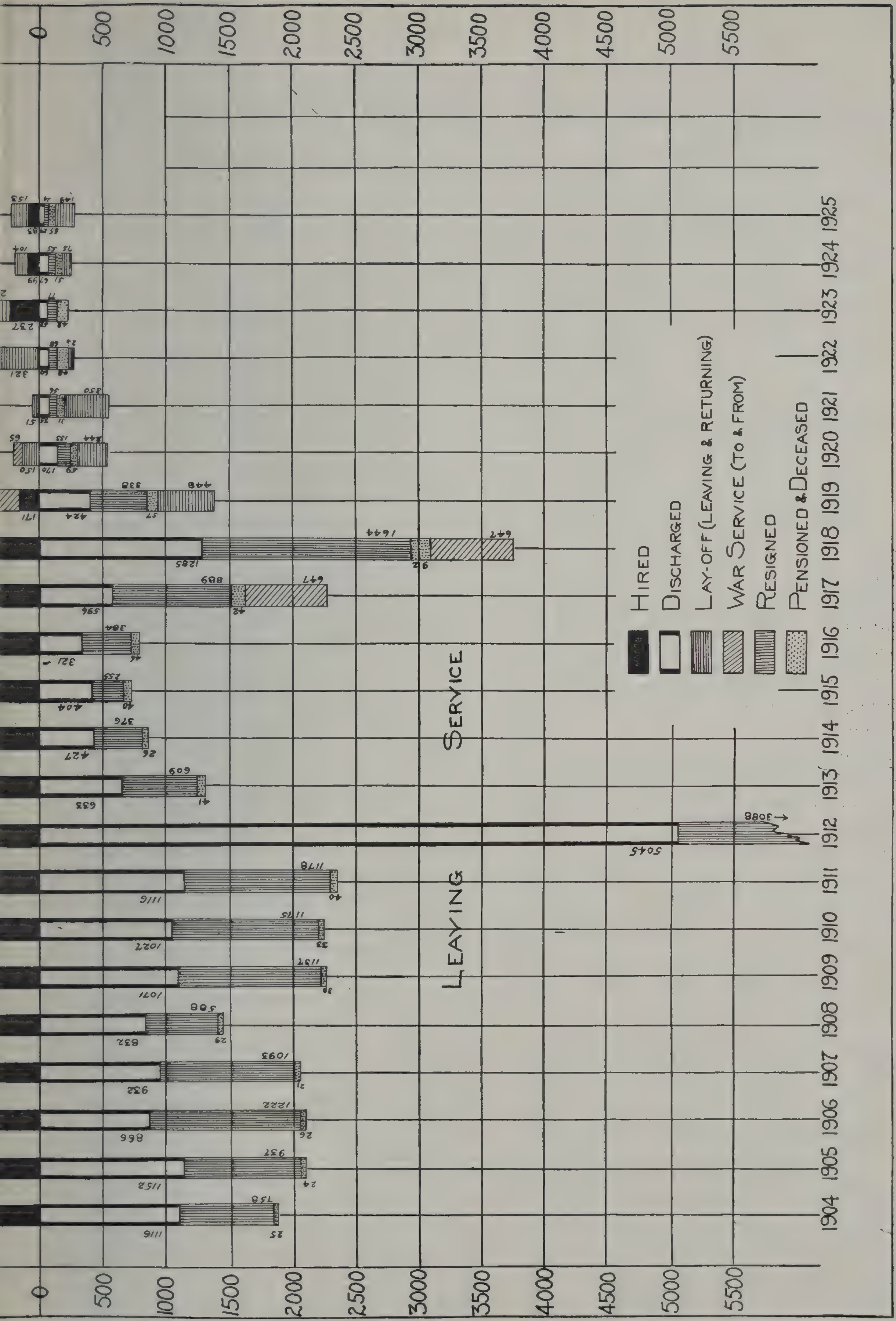
BOSTON ELEVATED RAILWAY ORCHESTRA

Front row, left to right, Harold L. O'Neil, violin; Alton Wilkins, drums; Frank J. Cusick, piano; Osgood Dickey, saxophone; Paul J. Holzman, saxophone. Back row, left to right, Lewis Mazzaro, violin; Emanual P. Faria, cornet; Alfred Ashman, trombone.

CHART SHOWING EMPLOYMENT DATA FOR TWENTY-TWO YEARS

The chart below is supplementary to that printed in the issue of Co-operation for October, 1924. At that time it was pointed out that only 237 new men entered the service in 1923, after three years in which no new men were employed. The later record has been equally remarkable, the numbers employed in 1924 and 1925 respectively being but ninety-nine and eighty-five.




SERVICE
LEAVING
HIRED
DISCHARGED
LAY-OFF (LEAVING & RETURNING)
WAR SERVICE (TO & FROM)
RESIGNED
PENSIONED & DECEASED
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
1904
1905
1906
1907
1908
1909
1910
1911
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1924
1925
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937
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932
1093
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1071
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1027
1175
33
1116
1178
40
5045
3088
633
609
41
427
376
26
404
255
40
321
384
46
596
889
42
647
1285
1644
92
647
171
424
338
57
448

PUBLIC UTILITY TAXATION†

By L. R. Nash

TAXATION is for the support of government so that it may accomplish its function of protecting the citizens of the country in their rights.

The fundamental law of the country provides that taxes shall be equitable and non-discriminatory, *i. e.*, that one person shall be taxed on the same basis as another. This principle is difficult of application because the federal government, the states, the counties and the cities all impose taxes and in different ways.

Among the varieties of taxes there come first those assessed upon "real" property, that is, land and buildings. They are assessed upon the basis of value, and at a rate necessary to provide the revenue required in the taxing district.

Then there are taxes on "personal" property, including, in the case of public utilities, rolling-stock, overhead lines, track and underground structures. Personal property also includes money, securities, household goods and stocks of merchandise.

Corporations are also subjected to a "corporation" tax assessed on the basis of securities, usually their stock issues, and earnings.

Other taxes include the charges sometimes made for business licenses, the taxes collected from insurance companies on the basis of their premiums, the poll tax assessed upon voters, excise taxes, and the taxes which public utilities are required to pay on "intangibles," franchises, etc.

All of these taxes yield about $7,000,000,000 per annum, and amount to $65 per capita. In 1923 the total income of the citizens of the country was about $66,000,000,000 and the property valuation, $300,000,000,000. The taxes collected in 1923 totaled three and one-half times as much as ten years earlier. The head of the average family now works one day a week for his government.

People do not resent the taxes as they would if the taxes were direct, and uniformly imposed. Much of the taxation is indirect, being concealed in rents, coal bills, electric service, etc. This encourages extravagance in government operations; hence publicity as to the real extent of taxation is to be encouraged in the interest of national prosperity.

Public Utility Taxes

On real and personal property, public utilities pay at the same rate as other businesses and as individuals. The only difference is that the assessments may be made higher in view of the inability of the utilities to move out if taxes are excessive. Utilities also pay business taxes, and for licenses, but the amounts are comparatively small.

Public utilites pay state and federal income taxes, which are non-discriminatory, except that the federal income tax division has some regulations, as to provision for depreciation, retirement of property, etc., at variance with those of the state public service commissions. These, however, are minor differences.

In many cases, public utilities pay a franchise tax. This may be a fixed sum imposed on the theory that the franchise is worth something, because it enables its owners to make more money than they could in other businesses. As was explained in a previous lecture, this theory does not hold under regulation.*

The franchise tax may be a percentage of gross earnings, as high as 4 to 6 per cent, or occasionally it is a flat sum. Again, the net earnings or the dividends may be taxed. Electric railway track is taxed at so much a mile, cars are taxed up to $25 to $50 a year each, poles in power lines are taxed at so much per pole, and the transmission line is taxed on a mileage basis.

In general the taxes paid by public utilities that are not paid by other businesses are inequitable. In the case of electric railways they result in higher fares than would otherwise be necessary.

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†Abstract of lecture delivered before the employees of the Boston Elevated Railway, under the auspices of the Massachusetts Department of Education, Division of University Extension.

*See Co-operation, April, 1926, p. 42.

They fall upon a class of the population who can least afford to pay them.

Imposts That Are Virtually Taxes

Public utilities are also subjected to certain burdens which amount to the same thing as taxes. Charges for street paving, for street cleaning and sprinkling, for street lighting and in some cases for traffic officers or the support of the public service commission come in this category.

Paving is an especially heavy burden upon electric railways. For this there is no present justification, although there may have been such when horses, drawing street cars, wore out the pavement. When electric power was adopted the cities continued the paving requirement on the supposition that the railways were going to be very profitable and that whatever they paid would be saved to the taxpayer. Under regulation this is not the case, and regulating bodies have in many cases ruled that the paving requirement is not justifiable. This was also the finding of the Federal Electric Railways Commission, which made an exhaustive study of the electric railway situation a few years ago.

In many states, however, the paving burden still continues to be imposed. The principal beneficiary is the automobile owner, who profits by the good paving.

Then there is the question of the free transportation of policemen and firemen. The railways desire to have these public servants ride without direct payment of fare, but the public should pay for such transportation. A flat sum might be paid by the municipalities each year to cover the value of such riding.

The Magnitude of the Electric Railway Tax

Electric railways in the United States pay about $100,000,000 per year in taxes. As their revenues are approximately $1,000,000,000 the taxes amount to about 10 per cent of the revenue. This is ¾ cent per rider, or $5 to $10 per year for each person who rides with reasonable frequency.

Of this 10 per cent two-thirds are direct taxes and one-third are imposts. Of the direct taxes about two-thirds are property taxes and other taxes which other businesses pay. The other third as well as all imposts consist of special taxes from which other busineses are exempt.

The Boston Elevated Railway pays 4.8 per cent of its revenue in direct taxes, which is slightly less than the average. The electric railways of New York State pay 47 per cent of their *net income** to the State in taxes. In Virginia the tax is between 35 and 40 per cent. In the country as a whole the electric railways pay about the same amount in taxes as they do in dividends.

As to what would be equitable taxes for public utilities, it would seem fair that they pay property and income taxes like those paid by other businesses. They should, however, be relieved from special taxes not imposed on other industries.

A Serious Indirect Tax on Electric Railways

The electric railway pays a higher tax than would otherwise be necessary due to the fact that its competitors, the automobile, the bus and the truck, have a free roadbed, built and maintained by the state. The electric railways spend $100,000,000 annually for maintenance of roadway.

In 1921 the sum of $1,000,000,000 was spent in the United States for highways. About 40 per cent of this was received from the sale of bonds, and presumably spent on new construction. Ten per cent came from gasoline taxes, which are at present collected in thirty-seven states.

The remaining 50 per cent came from general state and federal taxes, and about 10 per cent of that amount, or 5 per cent of the total, came from special taxes assessed on vehicles. Thus but 15 per cent of the total, or 25 per cent of the amount currently raised for highway maintenance, came from vehicle taxes. And these vehicles caused probably 95 per cent of the highway wear.

A check on this estimate is furnished by the automobile taxes paid by the owners in 1921.† These amounted to something over $300,000,000, subdivided thus: personal property, $75,000,000; federal excise taxes on sale of automobiles and accessories, $117,000,000; highway and gasoline taxes, $147,000,000. The last item is the one of particular interest. It is practically the amount estimated above, *i.e.*, 25 per cent of the $600,000,000 raised from taxation.

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*The net income, of course, is but a small part of the gross revenue.

†The latest statistics available as this is written.

If the motor vehicles pay only 25 per cent of the cost of upkeep of the highways, then the other 75 per cent must be paid by the public utilities and other general taxpayers. Thus motor vehicles can charge lower rates than if they were paying the full cost of highway maintenance and this increases the burden of the railway. Obviously in fairness to the general taxpayers the whole cost of highway maintenance should be collected through an equitably distributed gasoline tax.

An Extreme Illustration of Burdensome Imposts

To illustrate the lengths to which it is possible for a municipality to go in imposing burdens on an electric railway a proposition of a town of Pennsylvania is cited. The proposed imposts were as follows:

1. The construction by the railway company of a new Telford-macadam pavement, 12 in. deep, from curb to curb on the entire length of the street occupied by it.
2. The construction of footways of blue stone at each intersection of the highway.
3. The construction and maintenance of broken-stone gutters with inlets in the street or drains.
4. The construction of sufficient drains across the street.
5. Sprinkling of the street in dry weather and whenever reasonably required to do so by the highway committee.
6. The construction of steel bridges over waterways the full width of the street, with footways and railings on each side.
7. The installation and maintenance of twenty-five electric lights along the street.
8. The construction of a sidewalk on each side of the street.
9. The transplanting of all trees and hedges from the line of the sidewalk and the building of a good picket fence in front of certain property.
10. The construction and maintenance of a fence around the public school.
11. The keeping in good order at all times of the roadway along the street for its full width from curb line to curb line and also of the bridges, flag stones and gutters along the route.

The public service commission thought that this was going a little too far. The railway was given the right to take up its track in case it could not come to a fair agreement with the municipality.

References on Taxation

Readers are referred to the report of the special committee of the American Electric Railway Association, presented at the 1923 convention, which covers the principles and theory of taxation and the extent to which taxes are imposed. Some of the quoted figures were taken from this report.

A committee of the Chamber of Commerce of the United States has issued an interesting bulletin on motor transportation, which was reprinted in the issue of "Aera," published by the American Electric Railway Association, in its issue for December, 1923.

The association has also prepared, for the use of members, two reports on the paving requirements. One contains decisions of courts and commissions, pointing out the unfairness of existing laws requiring paving by street railways. The other contains commission decisions relieving companies of paving charges.

EXPENSIVE SNOW

The Boston Elevated Railway was not the only sufferer hereabouts from the snowfalls of the past few months. It is estimated that the storms of Feb. 4 and 10 cost the Boston & Maine Railroad upwards of a half million dollars, or $25,000 per inch of snowfall. Snow removal cost $200,000 and another large item of expense, from which fortunately the Boston Elevated was free, was payment to other roads for freight cars which the storms caused to be accumulated on the B. & M. tracks. On such "foreign cars" $1 per car per day accrues to the road which owns them.

RESCUE FROM ASPHYXIATION

Another name has come to our attention as that of a man who assisted in the rescue described on page 45 of last month's Co-operation. This is Michael Mulry, Trolleyman 2214.

NOVEL SNOW PLOW

(Concluded from Page 50)

against the side of the car in order to pass obstructions.

When in operation in any one direction, the nose plow, shear and shear extension on the front car and the leveller on the rear car are in action, and the leveller on the front car and the shear on the rear car are raised out of the way but ready for use when the direction of the plow is reversed.

It is expected that this unit will be operated by three men, a motorman and operator on the front car on the shears, and an operator on the rear car on the leveller.

CONGESTION AT GOVERNOR SQUARE

At the bottom of this page is a diagram based largely on data secured by the sub-committee on street traffic of the committee on municipal and metropolitan affairs, Boston Chamber of Commerce, on Apr. 14, 1926. The arrows show by their weight and direction the density and direction of the traffic at Governor Square between 8 a. m. and 6 p. m. The total is 37,735 vehicles in both directions. All but the arrows indicating the electric cars represent passenger automobiles, of which 45 per cent carried but one passenger, the average for all being 1.7 passengers. The arrows for electric cars show to the same scale the numbers of cars scheduled through Governor Square on Apr. 5, which is practically the same date as the above. These 2,296 cars in both directions actually carried 67,206 people. This compares with about 64,000 people passing through the square in automobiles. During the maximum 15-minute period, 5:30 to 5:45 p. m., vehicular traffic in both directions amounted to **1,204 vehicles,** whereas the Elevated operated seventy-eight cars (in thirty units) in this period, carrying 4,178 passengers.

The diagram reproduced was drawn by the Chamber of Commerce committee, with the exception of the arrows representing the electric cars which were added by the timetable department of the Elevated Railway.

SALESMANSHIP

The following letter was received from a person who recently chartered special busses. It indicates the character of service which brings increased desire on the part of the public to utilize the service we render:

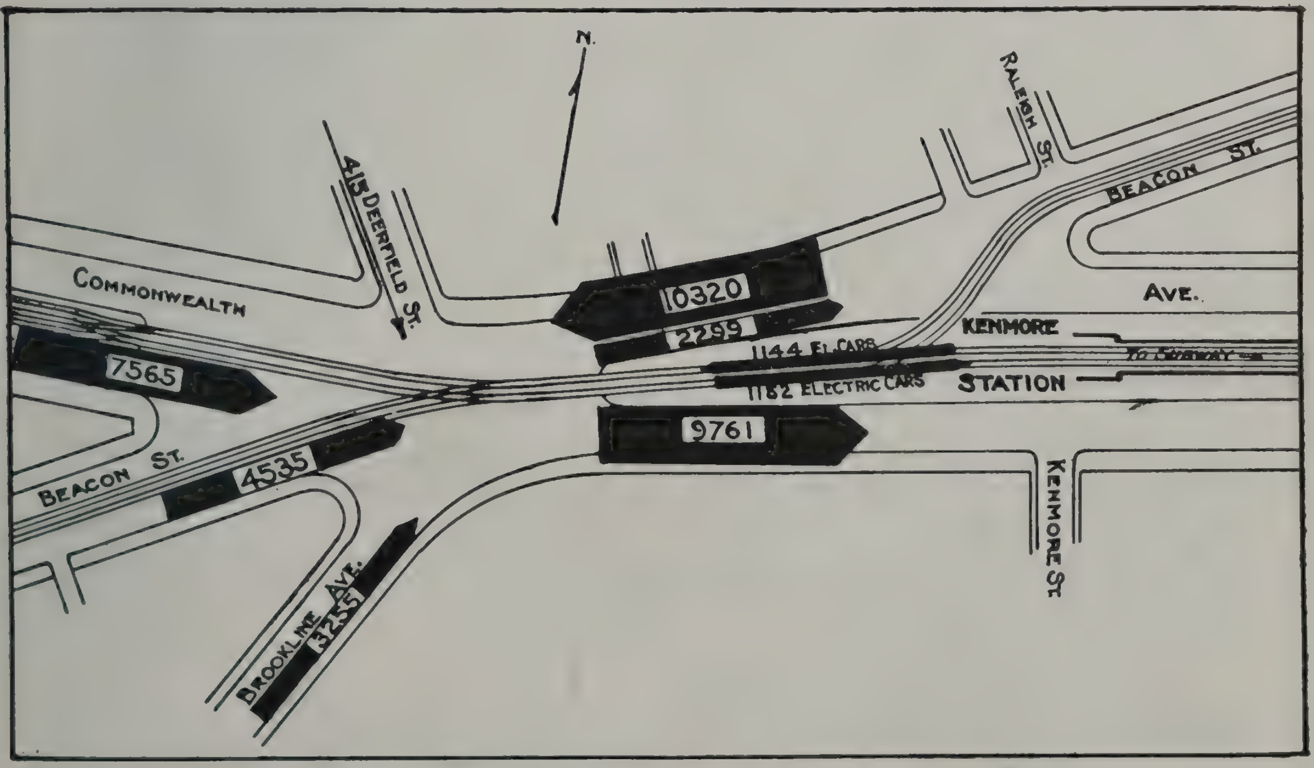
"The writer had occasion to use three of your busses on a party, from the Symphony Hall to the Chamber of Commerce and return, on May 13th.

"My file would be incomplete without a letter to you of appreciation for the promptness and courtesy of the service extended.

"The men were most cordial and made the transportation feel like a private cab.

"We also would like to compliment you on the cleanliness of the busses and windows. Many of the party were in evening dress and there was no hesitancy about soiling of fine clothing.

"If I ever have another occasion for transporting people in the City of Boston, I will certainly call upon you."



WHY TRAFFIC IS CONGESTED AT GOVERNOR SQUARE

CHANGES IN THE RESERVE FUND

Fiscal Year 1924-25
July 1, 1924, $1,000,000

July	$353,245.79*	Jan.	$269,649.08†
Aug.	445,820.47*	Feb.	118,183.05†
Sept.	207,834.30*	Mar.	211,955.71†
Oct.	36,155.55*	April	130,636.68†
Nov.	15,031.47†	May	139,081.44†
Dec.	152,527.52†	June	25,792.94*

Profit and Loss.......$ 51,865.43

Fiscal Year 1925-26
July 1, 1925, $1,000,000

July	$249,477.93*	Jan.	$223,301.90†
Aug.	367,593.94*	Feb.	$185,989.63*
Sept.	176,763.97*	Mar.	$161,772.65†
Oct.	117,703.96†	April	$77,031,69†
Nov.	45,265.00†		
Dec.	289,347.71†		

Profit and loss items omitted to end of year.

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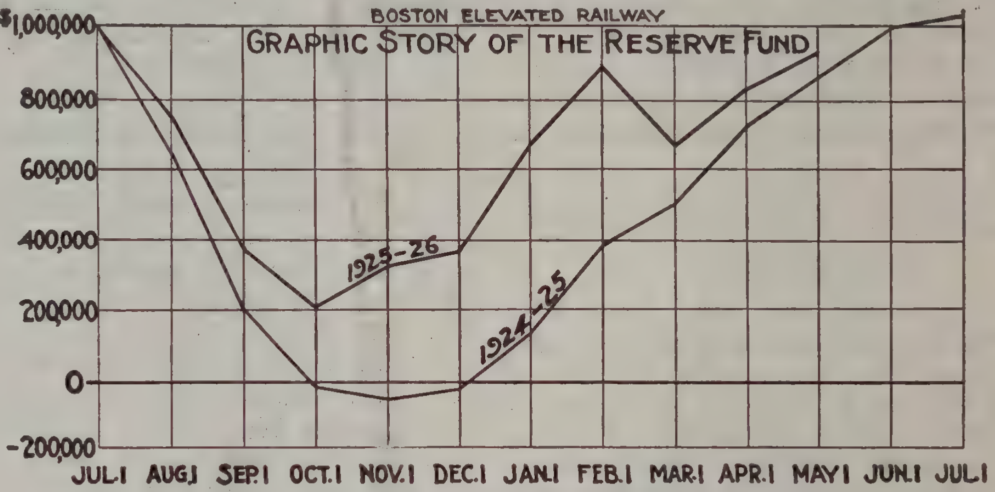
†Excess of revenue over cost of service. *Excess of cost of service over revenue.



APRIL OPERATION

	1926	1925
GENERAL FINANCIAL DATA		
Revenue exceeded cost of service	$77,031.69	$130,636.68
Operating revenue per car-hour (A. E. R. A. std.)	$6.03	$5.93
Operating revenue per car-mile operated	62.20c	62.58c
Average fare per revenue passenger	9.258c	9.250c
Ratio operating expense to operating revenue	70.42%	68.56%
PASSENGERS CARRIED		
Revenue passengers	31,592,745	30,971,113
Per cent 5c and 6c passengers	18.07%	18.08%
Revenue passengers per car-mile operated	6.489	6.646
OPERATING FACTS		
Trips operated	633,156	597,406
Car-miles operated:		
Rapid-transit lines	1,262,557	1,252,114
Surface, two-man	2,057,118	2,147,946
Surface, one-man	1,182,598	1,111,010
Express, newspaper and sprinkler cars	6,536	6,706
Motor bus	359,732	142,762
Total miles operated	4,868,541	4,660,538
ACCIDENT DATA		
Accidents per 10,000 car-miles	1.87	2.01
Accidents per 10,000 bus-miles	3.91	3.99
Revenue passengers carried per accident	32,073	31,700
Average number of witnesses per accident	3.38	3.22
COMPLAINTS AND DEFECTS		
Complaints in regard to car service	8	22
Employees complained of by car riders	104	101
Car defects reported per 10,000 car-miles	3.90	5.6
INFORMATION ABOUT POWER		
D.c. kw.-hr. output gross per month	21,604,205	19,709,130
Maximum kw. load	75,550	65,540
Tons of coal consumed	19,192	17,404
Lbs. of coal burned per d.c. kw.-hr. at cars	1.995	1.983
Operating and maintenance cost of power, including depreciation:		
Per d.c. kw.-hr. for car service	0.916c	1.049c
Per revenue car-mile	4.06c	4.24c
Kw.-hr. per revenue car-mile	4.435	4.046

May 20, 1926.

EDWARD DANA, *General Manager.*

9388.74

BOSTON ELEVATED RAILWAY

CO-OPERATION

Volume 5 JUNE, 1926 Number 6

INCREASE CAR RIDING

We all desire first-class electric car service.

Increased service adds to operating expenses.

Increased operating expense can be met in four ways:

1. By economy and efficiency.
2. By increasing revenue by securing more riders.
3. By an increase in the rate of fare.
4. By a deficit and assessing the tax payers.

The standard of electric car service that can be rendered depends largely upon the riding habit of the population served.

During 1925 the population served traveled upon the Elevated lines 300 times per capita—less than an average of a ride a day.

If the population served had traveled an average of once a day per capita, or 365 times, revenue would have been increased $7,300,000.

Improved service can be rendered if revenue is increased by such a sum as $7,300,000.

Secure all the fares, guard transfer losses, cultivate more riders. It's our business.

"A RIDE A DAY KEEPS POOR SERVICE AWAY"

A QUARTER CENTURY OF ELEVATED OPERATION

TREMONT ST. SUBWAY RAPID TRANSIT IN 1901

ON June 10, 1901, or just twenty-five years ago, the elevated line from Dudley Street, Roxbury, to Sullivan Square, Charlestown, was opened for service. It operated through the Tremont Street subway. This event marked an epoch in rapid-transit history in the United States. The railway became rapid-transit in fact as well as in name.

In earlier years the street railways of Boston were operated largely by the West End Street Railway, but in 1894 the Boston Elevated Railway was chartered and in December, 1897, it leased the West End. The next year the Elevated had in operation the Tremont Street subway, with surface cars, for which this subway was designed. But there was no elevated service. However, the company had the elevated structure and equipment under construction and began service as stated. On August 22, 1901, service was also begun on the Atlantic Avenue elevated loop, which also included the subway. The elevated structure, equipment and real estate cost over $20,300,000, an enormous sum at that time, sufficient to build 250 miles of surface lines, with all necessary equipment and paving, using expensive city construction.

In the fourth annual report of the company, the first signed by Gen. Wm. A. Bancroft (who was elected president Oct. 13, 1899), the following appears:

> "Operation was begun with 3-car trains, controlled by the multiple-unit system, each car seating 48 persons, having two 150-horsepower motors and air brakes. Since then 4-car trains have been in operation between terminals through the subway, and 2-car trains on the Atlantic Avenue loop. Many delays occurred during the first few weeks of operation, due chiefly to the newness of the trains and signal apparatus, to the large number who wished to ride, to the unfamiliarity of the trainmen in handling crowds of such magnitude, and to the severity of operating conditions in going from the subway levels to the elevated levels and in the subway curves; but due largely to the precautions which the company saw fit to take to guard against accident. Safety was made of first importance. Notwithstanding that the elevated system did not work at first with precision, it has given from the outset genuine rapid transit. From the first the trains have been well filled, and the marked abandonment of the parallel surface lines for the elevated road has proved conclusively its popularity with the traveling public."

PROPER USE OF TRANSFERS SAVES REVENUE LOSS

Car conductors or operators have a great opportunity to safeguard the interests of the railway in connection with transfers by punching the starting point carefully and tearing off the transfers properly when issuing them, and inspecting them carefully when received. With our form of transfer it is possible to tell at a glance whether it is good or not.

The transfers issued on the Boston Elevated Railway to passengers who pay 10 cents are extremely simple in form and reduce the work of the conductor or operator to a minimum. The date is punched at the station. The starting point of the line is punched by the conductor or operator before he starts on any half-trip. When this has been done he has only to tear the transfer from the block at the proper point to show the time limit, which should not be less than 20 minutes after the time the car is due to reach the last transfer point on the half-trip.

The passenger is free to transfer at any established transfer point. It is not necessary for the conductor or operator to know at what point the transfer is to be used.

A transfer is good in accordance with the terms printed upon it, with which all conductors and operators are familiar. It is good only at an established transfer point, on the date punched, before the expiration of the time limit, and it is not good on a car running to the point punched.

ELEVATED HORSES WIN RECOGNITION

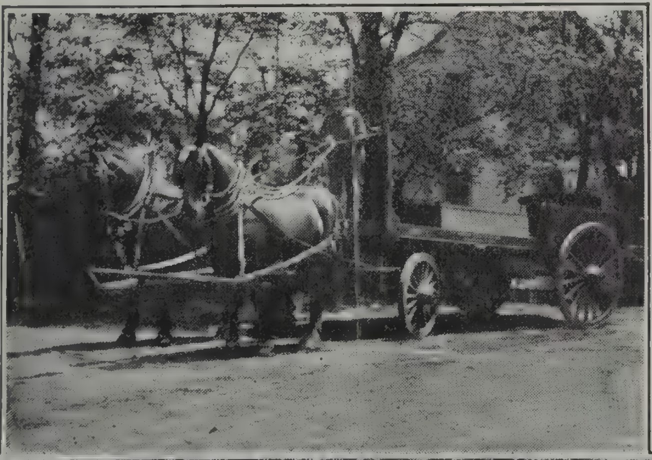
Following the practice of the past several years, the Railway was represented this year in the annual work-horse parade, on May 31, five horses being entered, consisting of two double-teams and one single. Information regarding the teams is given in the table at the bottom of this page.

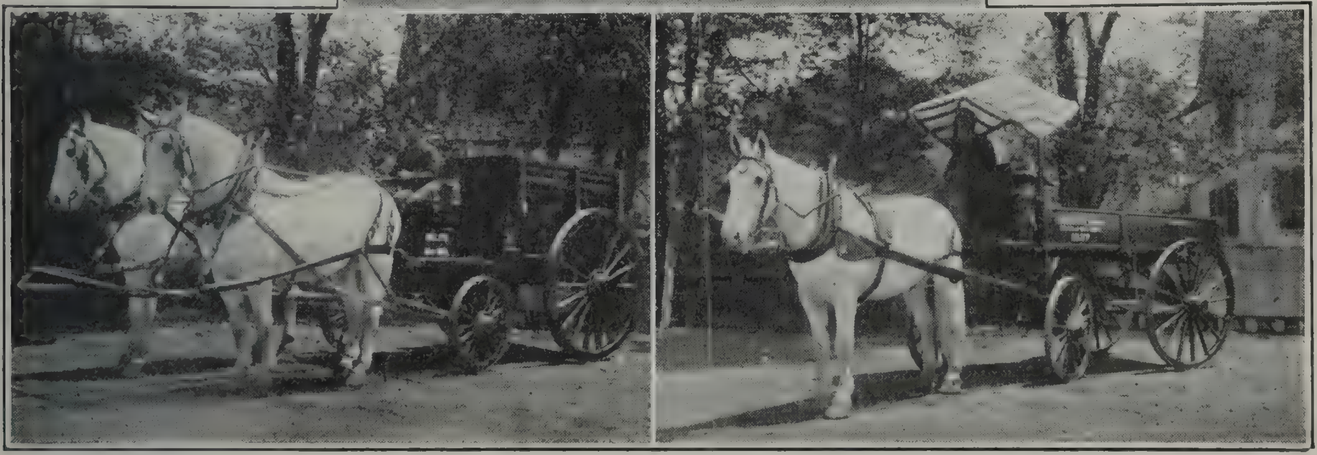
All five horses received first prizes in their classes. Michael Sullivan and Andrew McPherson, veteran drivers, received gold and silver medals, respectively.

Due to the increased use of motor vehicles, the railway has not purchased any horses for several years, and as the horses now in use are for the most part well advanced in years, their number is gradually decreasing, so that now only a total of forty-seven horses are owned.

When a horse is no longer able to do the work required, it is not sold in the open market, but is either farmed out for its remaining days or humanely destroyed.

Two stables are operated now for housing the horses, one at Lenox Street, Roxbury, and the other at Baldwin Street, Cambridge. This year all five horses entered in the parade were from the Baldwin St. Stable, and credit for their excellent condition is due Stable Foreman R. F. Ellis, as well as the men who drove them.

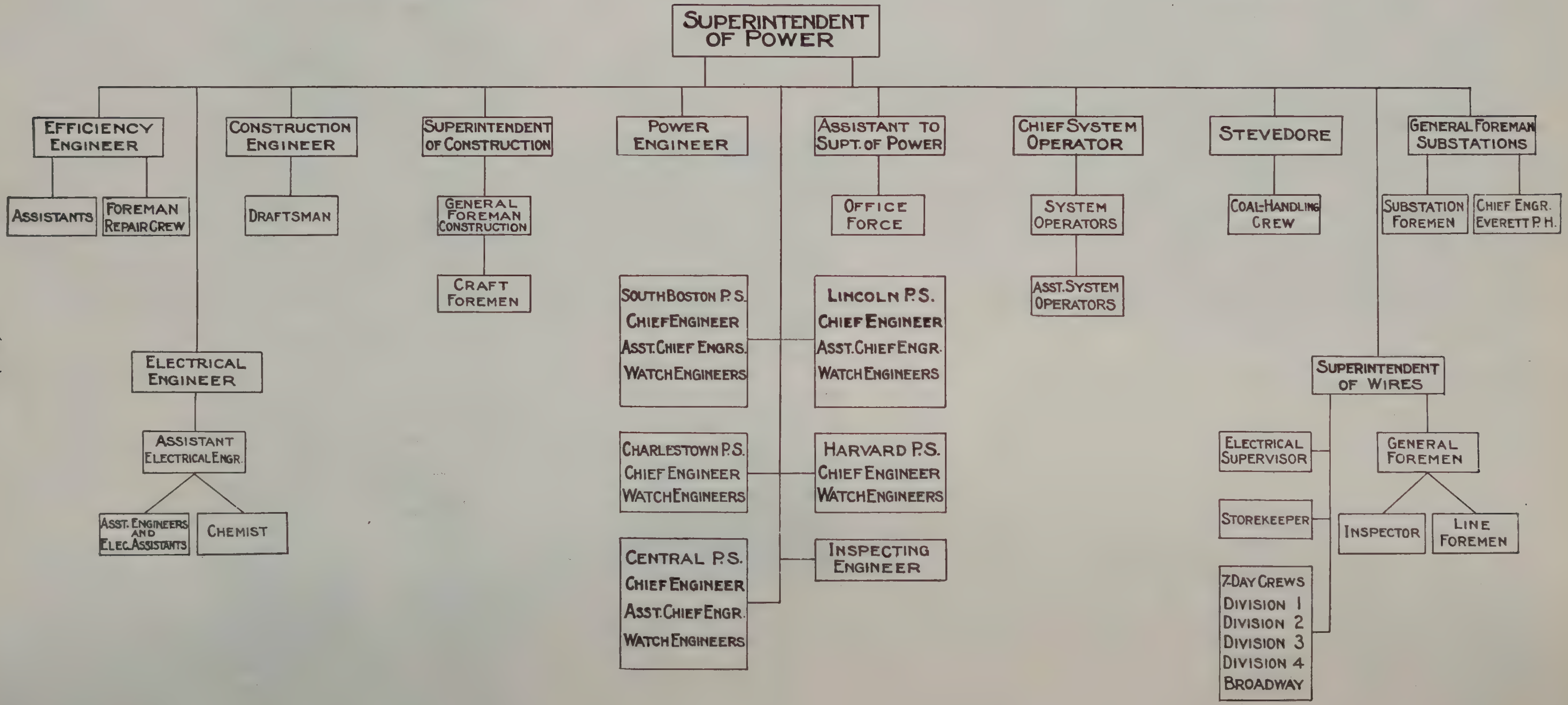




THESE TEAMS WON IN THE ANNUAL WORK-HORSE PARADE COMPETITION

No.	Name	Age	Color	Years in Parade	Driver	Remarks
11562	Don	16	Gray	1921-1926 incl.	Stephen Dagle	First prize each year
11497	John	20	Gray	1921-1926 incl.		
11498	Nig	21	Black	1922-1926 incl.	Andrew McPherson	First prize each year
11572	Jim	15	Brown	1926		
11486	Teddy	20	Gray	1921-1926 incl.	Michael Sullivan	First prize each year

ORGANIZATION OF DEPARTMENT OF POWER


SUPERINTENDENT OF POWER
EFFICIENCY ENGINEER
ASSISTANTS
FOREMAN REPAIR CREW
CONSTRUCTION ENGINEER
DRAFTSMAN
SUPERINTENDENT OF CONSTRUCTION
GENERAL FOREMAN CONSTRUCTION
CRAFT FOREMEN
POWER ENGINEER
ASSISTANT TO SUPT. OF POWER
OFFICE FORCE
CHIEF SYSTEM OPERATOR
SYSTEM OPERATORS
ASST. SYSTEM OPERATORS
STEVEDORE
COAL-HANDLING CREW
GENERAL FOREMAN SUBSTATIONS
SUBSTATION FOREMEN
CHIEF ENGR. EVERETT P.H.
SOUTH BOSTON P.S. CHIEF ENGINEER ASST. CHIEF ENGRS. WATCH ENGINEERS
LINCOLN P.S. CHIEF ENGINEER ASST. CHIEF ENGR. WATCH ENGINEERS
CHARLESTOWN P.S. CHIEF ENGINEER WATCH ENGINEERS
HARVARD P.S. CHIEF ENGINEER WATCH ENGINEERS
CENTRAL P.S. CHIEF ENGINEER ASST. CHIEF ENGR. WATCH ENGINEERS
INSPECTING ENGINEER
ELECTRICAL ENGINEER
ASSISTANT ELECTRICAL ENGR.
ASST. ENGINEERS AND ELEC. ASSISTANTS
CHEMIST
SUPERINTENDENT OF WIRES
ELECTRICAL SUPERVISOR
STOREKEEPER
7-DAY CREWS DIVISION 1 DIVISION 2 DIVISION 3 DIVISION 4 BROADWAY
GENERAL FOREMEN
INSPECTOR
LINE FOREMEN

This is the fourth in a series of charts showing the organization of the Boston Elevated Railway. The following charts have, been issued previously: December, 1925, general organization; February, 1926, transportation department; May, 1926, maintenance department.

ELECTRIC RATES AND ELECTRIC RAILWAY FARES

By L. R. Nash

PRELIMINARY to a consideration of electric railway fares it will be well to consider electric light and power rates, as several principles which have recently been applied to fares are found to have been used much earlier in the rates charged for electric service.

The elaborate rate structures which are in use by electric light companies are the result of the effort to adjust the rate schedules to fit the cost of service to different classes of customers.

When the open arc lamp and the 16-candle power incandescent lamp were practically the only types of electric lamp in use, the "flat" rate, of so much per lamp per month, was popular. However, some customers required services for only short periods and they were overcharged at the flat rate. The use of "half-night" and "all-night" circuits was only a partial remedy. Metering of the service proved to be necessary. At first chemical meters were used, in which the quantity of electricity used by a customer was registered by means of deposition of metal. The watthour meter soon followed, and thereafter charges were based upon kilowatt-hours of service.

At first the kilowatt-hour rate was uniform. Large users objected to this, claiming a right to a lower wholesale rate as in other lines of business. Thus quantity discounts came to be made, leading to the "step" rate under which the rate becomes lower by "steps" as the monthly consumption increases.

But this system of charges was still not entirely equitable, for of two customers using the same number of kilowatt-hours per month, one might use the energy in, say, one-tenth as much time as the other. He would, for the shorter time, use an average of ten times as much power as the other, which would cost more to furnish. Hence the next stage in rate development was the provision of lower rates for high load factor, *i.e.*, more nearly continuous use of the service. For example, a maximum rate might be charged for the first 30 hours use per month, with a lower rate for the remainder.

A further logical development was the basing of the charges on both the necessary investment and the energy used. Under this plan the customer pays a fixed monthly sum per kilowatt of his "maximum demand," *i. e.*, an investment charge, plus a charge per kilowatt-hour to cover operating expenses.* Thus if a customer uses a large amount of energy per kilowatt of "maximum demand" his average kilowatt-hour charge is relatively small, and *vice versa.*

Rates in the Gas and Telephone Businesses

Nearly all of the classes of rates used by electric companies apply also to the gas business. Gas distribution is simpler than electric, however, because gas can be stored in holders to take care of the peak loads, and gas has not yet had such wide distribution as electricity.

The same principles also apply to telephone service. Originally telephone rates were "flat" rates. Now, in the large cities, a plan is used involving a "base" charge per month plus another charge based upon all or part of the actual calls made.

Electric Rates in Actual Service

It should be understood that complicated rate schedules are not justified for small business, such as residence service. Simplicity demands a uniform rate schedule for all customers. With large customers, each must have a rate which fits in with the cost of service to him. All that large customers will pay is an amount not to exceed the cost at which they could produce electrical energy for themselves.

Rates of Fare for Electric Railways

In electric railway fares the same principles are found as in electric

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†Abstract of lecture delivered before the employees of the Boston Elevated Railway, under the auspices of the Massachusetts Department of Education, Division of University Extension.

*By "maximum demand" is meant the maximum average of power which a customer may draw from the line for a short specified period, say from 15 minutes to an hour.

charges. First there is the "flat" fare, a charge usually of so much per week (say $1 or $1.25), for unlimited riding. This is known as the "weekly-pass" system. Then again, the straight fare charged on most electric railways corresponds to the uniform meter charge.

Reduction in fare for quantity riding is provided by tickets, corresponding to the quantity rate for electrical energy. And there is even a parallel to the load factor rate in the "nickel pass." With this the purchase of an identification ticket permits the holder to ride at a rate lower than the cash passenger, say for 5 cents when the cash fare is 7 cents or 8 cents. Still again, there are sometimes special rates for "off-peak" riding, workmen's tickets have been sold at special rates, and higher fares have been charged for "owl" service.

The important fare systems will now be considered in more detail.

The Straight Fare

In America it has been found most practicable, within reasonable limits, to charge a straight fare regardless of the length of ride. The short-distance rider, of course, helps to pay the cost of the long rides, and a point is ultimately reached at which the short-distance rider feels that he is paying too much. In general this point has not yet been reached in the United States.

In Europe the zone system of fares is popular, and this has sometimes been blamed for the congestion in European cities. There is little warrant for this charge. New York, with a flat 5-cent fare, has the greatest congestion in the world. Paris, Berlin and Vienna come next, followed by Boston and London.

Under the zone system, in Europe, zones about one mile wide are the rule, and a separate fare is charged in each. The checking of the identification slips which are given the passengers would be considered troublesome in this country.

The Zone System in the United States

The zone system, however, has been used in this country in a few cases. Large city areas, or territories in which there are adjacent cities, have been divided into zones, with a minimum payment for two or more. The minimum fare is intended to cover the usual ride. In Milwaukee a flat fare is charged in a central area, with an extra charge for each outlying zone. In other cities a base fare is charged in the central area and an equal fare outside.

The zone system, in the form in which it is preferred in America, has the advantage that as the cost of service goes up the base area and the sizes of the zones can be reduced, or other modification made, to permit revenue to be increased without affecting the base fare.

The zone system also helps to meet jitney or bus competition, as this is primarily a short-distance competition. It provides for charging a lower fare on the cars in competitive territory.

In Boston there is a form of zone system in use which permits passengers to ride for a limited distance, without transfer privilege, for less than the regular fare of 10 cents.

Reduced Rate Tickets

There is some justification for the reduced-fare tickets which are sold on many properties where a flat fare is charged, especially if the reduction is sufficient to insure the use of the tickets by practically all regular riders. The casual rider, such as the man who uses his automobile except in stormy weather, then properly pays more than the regular patrons.

The usual reason, however, for the use of reduced rate tickets is to avoid the use of "pennies" in collecting "odd" fares,* the difference between the cash rate and the ticket rate being less than one cent. If tickets can be bought in small quantities, say in twos, the casual riders will use them and one advantage of their use is lost. On the other hand, if larger quantities are sold, say a dollar's worth, there is another advantage to the railway. It collects its money well in advance of the use of the service.

More About the Weekly Pass

The weekly pass has come into fashion within the past three years,† and is in use in more than thirty cities in the

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*The term "odd fare" has come to be used for city fares other than 5 cents or 10 cents.

†I.e., prior to the end of 1923 when this lecture was delivered.

United States. The pass is usually transferable, for use by one person at a time. Its purpose is to encourage riding both by the holders and their friends who may pay the regular fare.

The consensus of opinion among railway men is that the pass does not materially increase revenues under normal conditions, although it does increase riding. The pass was successfully used to eliminate jitney competition in several cities. In Youngstown, Ohio, for example, this was done and then the use of the pass was discontinued.

Fundamentally the pass is wrong in principle because it is a return, in exaggerated form, to the flat-rate system abandoned a long time ago in electric lighting. The term "exaggerated" is used because there never was anything in the electric-light flat rate to correspond to the transferability of the pass.

The Nickel Pass Is Better

The system in which is used what has been termed a "nickel pass" or "nickel permit" operates on a sound principle. If a person pays, say, $2 a month for an identification card which gives him the right to ride for 5 cents where otherwise he would pay 7, 8 or 10 cents, he has an incentive to ride freely. The more he rides the lower his average fare.

This plan forces the casual rider to pay a fare high enough to cover the real cost of the service furnished him. It also discourages jitney competition and encourages short-distance riding, or at least does not discourage it.

The nickel permit has not been widely advertised, but it is used in ten cities. It is to be hoped that its use will spread.*

Transfers

It was formerly the custom in America to give universal free transfers. The theory behind this was that it avoided discrimination against passengers who could not use a through route between two points in a city. Otherwise a person who happened to find a through route convenient would have a lower fare than others, in addition to the advantage of not having to change cars.

A railway cannot afford to through-route cars between all parts of a city, especially between a densely populated and a sparsely populated section, or between sections of widely different characteristics. In such cases the routes from each district are looped back in the central district. In such cases transfers are equitable, although if all lines were so looped it would be equitable not to give any free transfers. A fare adjusted to cover cost of service without free transfers would be lower than with such transfers, and non-transfer passengers would profit thereby.

In many cities transfers are being charged for on the basis of the fact, shown by traffic studies, that transfer passengers ride farther than others. A transfer charge provides additional revenue in a simple manner. It was first imposed during war time.

Does the Rate of Fare Affect the "Riding Habit"?

The number of annual rides per capita of population is termed the "riding habit." In large American cities this is from 200 to 400 rides per annum. A practical question for the railway manager is: What are the effects of change of fare upon the riding habit?

During and after the war, fares were increased and riding fell off. This was probably due, not to the inability of the patrons to pay the higher fares, but to their resentment at the breaking away from the supposedly immutable 5-cent fare, and because they disliked the inconvenience of the odd fares. Newspaper agitation also had its effect. Actually, people can better afford to pay 7 cents now than they could 5 cents before the war because the cost of carfare is less compared with their incomes. A continuous study of the riding habit shows that the people who stopped riding during and after the war are now riding again.

The per capita rides for the country were 117 in 1922 as compared with 110 in 1917. The fare systems committee of the American Electric Railway Association found that in 1919 and 1920 the increase in riding was about 6 per cent per annum, whereas for the five years ended in 1917 it was 3.7 per cent. Thus the riding habit improved while fares were rising, but this was due to the exceptional business prosperity of the country. The net result of a total increase of 36 per cent in fares has been an increase of only 12 per cent in revenue, indicating a falling off in the riding. This, however, is considered only temporary and due to resentment and the agitation stirred up by newspaper criticism.

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*For further details of this system see an article by the writer in the "Electric Railway Journal," Sept. 27, 1919, page 647.

There have not been enough reductions in fare to disclose their effect upon riding. Studies made before the war showed that fare reduction does not materially increase riding. At that time the results in a number of cities were examined where fares were reduced below 5 cents by the sale of six or seven tickets for a quarter. Evidently people did not care whether they paid 5 cents or less, which is consistent with the idea that they like a single-coin fare and the investment of a sum as large as a quarter, plus the bother of preserving tickets, offsets in their minds the monetary saving of the lower fare.

As to the tendencies for the future, there will be one toward the avoidance of odd change, either by the use of the 10-cent fare with tickets, or by the increased use of tickets or tokens when the fare is lower. The former seems preferable. Excessively long rides for the base fare will be eliminated where possible, and any system, such as that employing the nickel permit, which encourages short-distance riding should be encouraged.

Some Good References

Among the references available on the subject of fares the following will be found helpful for further study:

American Electric Railway Association—Report of committee on fare systems, made in 1920; report of committee on zone fares made in 1919.

Jackson and McGrath—"Street Railway Fares." A study of fares throughout the country, and the costs that such fares must cover. Contains maps of transportation areas in many cities.

Doolittle, F. W.—"Cost of Urban Transportation Service." An exhaustive analysis of transportation costs and a discussion of the elements of cost, valuation, population, congestion, etc.

ACCIDENT-PREVENTION

The Boston Elevated Railway has been apprised by the Pullman Company, Pullman, Ill., of its recent special effort to reduce accidents. It has been conducting safety programs during the past few weeks, but the results cannot yet be stated. Last year during May, when a special campaign was conducted, 219 of the 231 Pullman yards in the United States, Canada and Mexico operated without a lost-time accident. In thirty-one days there were only twelve lost-time accidents among the 12,000 employees, a reduction of 80 per cent over the preceding year.

THREE KINDS

There are three kinds of people in all organizations, and ours is no exception. They are the rowboat people, the sailboat people and the steamboat people. The rowboat people always need to be pushed or pulled along. The sailboat people move along when a favorable wind is blowing. But the steamboat people move along continuously through calm and storm. They are masters of themselves and their surroundings. We need more people of the steamboat variety. In what class are you? You do your own classifying. That duty devolves upon you.—*Exchange.*

WHY READ BOOKS?

Of all the forms of self-cultivation none is more accessible, and none is so constant a source of pleasure and profit as the reading of books. "Reading maketh the full man," and rounds out one's whole activity. The person who has formed the habit of directed reading is rarely at a loss as to how to occupy himself, and if he is not the master of his fate, he is at least the master of his time. The wider mental horizon and more varied interests induced through reading not only make for a richer life, but make one a better social companion and a better business associate.—*The Argonaut.*

ALERTNESS CONTEST IN POWER DEPARTMENT

Much interest is being taken by the line crews in the wires and conduits division of the power department in an "alertness contest," to see which crew can locate and remove the most so-called vibration cracks and old burns from the trolley wire.

There are nineteen crews competing. Each crew is known by a letter and the result of the contest, that is, the number of vibration cracks and old burns located by each crew, is posted each month. The crews are enthusiastic regarding the contest.

On the truck used by the winning crew, a sign like the one illustrated is placed. The "E crew," the winner for May, is also shown.

The object of this contest is to reduce the number of trolley breaks. During 1925, there were on this system 188 trolley breaks, ninety-eight of which, or 52 per cent, were due to vibration cracks and old burns. The vibration cracks are very difficult to locate, as they show only as fine hair cracks on the wire, hence great alertness is necessary in detecting them.

EDUCATIONAL RECORDS OF EMPLOYEES

A large number of Boston Elevated employees are taking courses in neighboring educational institutions or by correspondence, or have already completed such courses. Provisions have been made in the General Manager's office for filing information regarding such educational activities and all employees are invited to send in statements regarding courses which they have completed or are taking.

WINNERS IN ALERTNESS CONTEST
Left to right: T. Fleming, P. Shortell, P. Carroll, E. Cotter

"EL" INVENTORY LOWER

On May 6, in addressing the New England Street Railway Club, at the Copley-Plaza Hotel, William H. Tirrell referred to the results achieved by the Boston Elevated Railway in reducing stores balances during the past two years. He said that the Department of Commerce has published a chart indicating the average carrying charge for railway stores to be 25 per cent of the purchase price.

Mr. Tirrell explained that intensive, concentrated study of stores conditions is necessary in order to keep inventories at a minimum. During 1924, he explained, the Boston Elevated management engaged an outside agency to make a survey of its stock conditions and suggest methods for reducing inventories. It is interesting to note that during the past two years the following results have been achieved: On Dec. 31, 1923, the material on hand totaled $3,201,000; on Dec. 31, 1925, the total was $2,273,000, or $928,000 less. As the carrying charges on this amount are 25 per cent, the elimination of material from stock represents a saving to the railway of $232,000 a year.

On Dec. 31, 1923, the ratio of material on hand to the year's operating expenses was 13.27 per cent; on Dec. 31, 1925, it was 9.31 per cent. During the two years materials and supplies on hand dropped about 30 per cent.

FEWER HIGHWAY ACCIDENTS

The Boston Elevated Railway was well represented at the State Conference on Street and Highway Safety held at the Copley Plaza Hotel on May 20. Governor Fuller called the conference to order. Eighty-six cities and towns were represented and there were visitors from outside the state.

Among other things, the Governor said:

"The responsibility for accident to a pedestrian in the street by motor vehicles rests primarily and almost always on the individual operator. I observe people every day of the week riding along the road as if they owned it; as if the person who owned a motor car, or operated one, was a superior individual. I see them pass the end of an electric car coming in the opposite direction, taking it for granted that nobody is coming around the end. Their idea seems to be 'full steam ahead. People have no right in the road!' "

The following resolutions were adopted at the conference:

1. That the Governor appoint a permanent committee to sponsor highway safety activities throughout the Commonwealth.
2. That the several mayors call together a group of officials to study local highway problems, and that a mass meeting to arouse public interest be held before July 1.
3. That the traffic police get after the careless and thoughtless motor drivers, as well as those who drive recklessly or at excessive speed.
4. That parents be asked to co-operate in a state-wide movement to keep all children from playing in the streets.
5. That reasonable legislation be enacted regulating the use of streets by pedestrians.
6. That the police of the cities and towns standardize their hand signals and traffic regulations.

AN APPRECIATION

"Man Instinctively Seeks Knowledge and Values It."

The writer of these few lines of appreciation attended the meeting Wednesday evening, June 2, at the Sullivan Square Schoolroom, when his fellow men and women employees of the railway who had met the requirements of the educational program were awarded their certificates.

It was an inspiring and memorable event, one that really deserves the high praise so unanimously given it.

The obvious interest and enthusiasm of the several hundred employees present emphasized strongly the growing popularity of the educational policy of the management, which it is now hoped has become a permanent feature of our opportunities.

It is perfectly evident that these group-conference courses are a force to be counted on in that *teamwork* that is of the essence of the advancement of the interests of the employees, and are bound to leave their mark on the ideals, aims, methods and standards of those who take advantage of them.

No word other than "great" indicates

so well the achievement of both the railway and its employees in the educational courses which this meeting brought to such a successful close.

EDUCATIONAL WORK CLOSES

The educational program for the season ended on June 2 with appropriate closing exercises in the Sullivan Square schoolroom. This work was under the direction of the committee shown in the accompanying group photograph.

The program of the closing meeting was carried out under the direction of Mr. Dana. It opened with music by the Boston Elevated Orchestra, after which the chairman outlined the work of the season and introduced Charles W. Hobbs, who represented the Division of University Extension, Massachusetts Department of Education. The next speaker was President Daniel L. Marsh of Boston University, who gave an inspiring address on the use of spare time and the value of education. Then there was more music, the awarding of certificates, a motion picture and a buffet supper served at the rear of the room.

The accompanying table shows the number of certificates awarded to 536 employees by the Massachusetts Department of Education and the Boston Elevated Railway.

	State Certificates	Elevated Certificates
Foreman Training		121
Advanced Electrical course.		16
Inter-departmental Accounts		123
Investing Savings		20
Transportation problems as a whole		93
Selling Service.................		44
First Aid	9	3
Current Events	3	15
Business English		42
Timetable Construction		5
Accident Prevention		14
Automotive Maintenance ...	48	1
Applied Psychology	2	35
Public Utility Economics...	80	23
Parliamentary Law	15	
Correspondence and Reports	11	
Public Speaking	44	
Total	212	555

START THE DAY CHEERILY

When a new day comes to greet you, rise to
meet it with a smile—
Every task it brings will lighten; and be
easier the while;
And the journey, long and tiring, that you
really dread and fear,
Will be shorter and much brighter if you
start the day with cheer.

If you wake to pout and grumble, and to
wear a scowl or frown,
Crossing bridges ere you reach them will
most surely let you down.
Be the clouds all dark and gloomy, and the
outlook sad and drear,
You will see some gleams of sunshine if you
start the day with cheer.

Other folks have got their troubles, everyone must have his share;
Don't be fretting over worries that you may
not have to bear.
Face the new-born day with gladness, meet
its tasks with hope, not fear—
Joys are waiting round the corner if you
start the day with cheer. —Exchange.

COMMITTEE ON EDUCATION, 1925-1926
Standing, left to right: E. R. Kelly, R. B. Smyth, L. J. Dickey, Edward Dana, J. P. Boyden, T. A. Dunbar, Forrest W. Carroll, F. I. Wilkins. Sitting, left to right: C. B. Gleason, E. H. Chandler, Miss L. E. Stone, A. S. Hall, H. H. Norris.

CHANGES IN THE RESERVE FUND

Fiscal Year 1924-25

July 1, 1924, $1,000,000

July	$353,245.79*	Jan.	$269,649.08†
Aug.	445,820.47*	Feb.	118,183.05†
Sept.	207,334.30*	Mar.	211,955.71†
Oct.	36,155.55*	April	130,636.68†
Nov.	15,031.47†	May	139,081.44†
Dec.	152,527.52†	June	25,792.94*

Profit and Loss........$ 51,865.43

Fiscal Year 1925-26

July 1, 1925, $1,000,000

July	$249,477.93*	Jan.	$223,301.90†
Aug.	367,593.94*	Feb.	185,989.63*
Sept.	176,763.97*	Mar.	161,772.65†
Oct.	117,703.96†	April	77,031.69†
Nov.	45,265.00†	May	57,010.06†
Dec.	289,347.71†		

Profit and loss items omitted to end of year.

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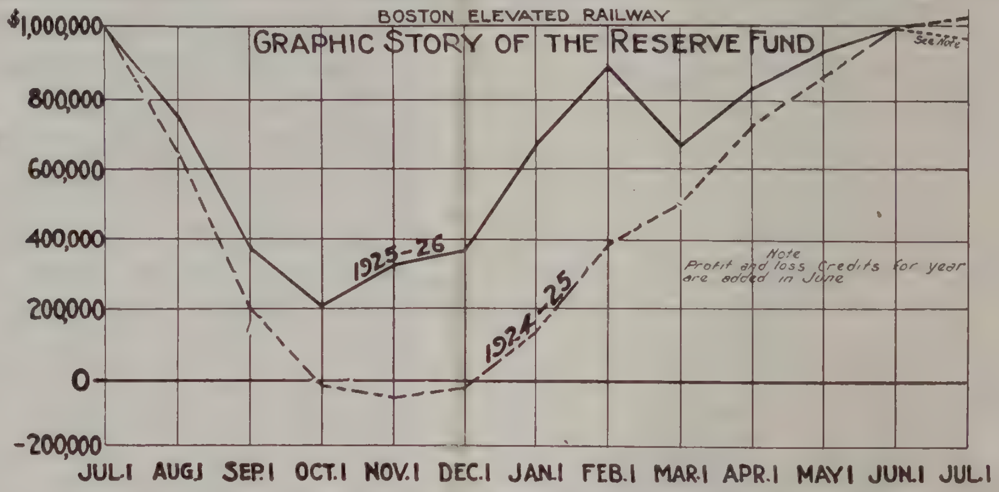
†Excess of revenue over cost of service. *Excess of cost of service over revenue



MAY OPERATION

	1926	1925
GENERAL FINANCIAL DATA		
Revenue exceeded cost of service	$57,010.16	$139,081.44
Operating revenue per car-hour (A. E. R. A. std.)	$5.81	$5.91
Operating revenue per car-mile operated	59.94c	61.53c
Average fare per revenue passenger	9.256c	9.244c
Ratio operating expense to operating revenue	70.89%	68.48%
PASSENGERS CARRIED		
Revenue passengers	31,576,293	31,326,996
Per cent 5c and 6c passengers	18.05%	18.16%
Revenue passengers per car-mile operated	6.295	6.529
OPERATING FACTS		
Trips operated	654,538	619,827
Car-miles operated:		
Rapid-transit lines	1,290,696	1,280,268
Surface, two-man	2,096,235	2,185,259
Surface, one-man	1,224,525	1,156,787
Express, newspaper and sprinkler cars	7,458	8,370
Motor bus	404,463	175,657
Total miles operated	5,023,377	4,806,341
ACCIDENT DATA		
Accidents per 10,000 car-miles	2.19	2.07
Accidents per 10,000 bus-miles	3.93	4.15
Revenue passengers carried per accident	27,000	30,360
Average number of witnesses per accident	3.21	3.69
COMPLAINTS AND DEFECTS		
Complaints in regard to car service	8	8
Employees complained of by car riders	78	90
Car defects reported per 10,000 car-miles	3.9	4.9
INFORMATION ABOUT POWER		
D.c. kw.-hr. output gross per month	18,101,785	18,298,860
Maximum kw. load	61,190	62,400
Tons of coal consumed	15,727	16,253
Lbs. of coal burned per d.c. kw.-hr. at cars	1.951	1.995
Operating and maintenance cost of power, including depreciation:		
Per d.c. kw.-hr. for car service	1.056c	1.102c
Per revenue car-mile	.0379c	.0404c
Kw.-hr. per revenue car-mile	3.586	3.670

June 21, 1926.

EDWARD DANA, *General Manager.*

81

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BOSTON ELEVATED RAILWAY

CO-OPERATION

Volume 5 JULY, 1926 Number 7

MORE RIDERS—IMPROVED SERVICE

A large investment is required to place electric car service at the disposal of the community.

Most business enterprises "turn their capital several times each year." That is, their income is several times greater than their plant investment.

The Boston Elevated Railway turns its capital once in 4½ years. That is, its annual income is only about one-fifth of its plant investment. Gross Earnings, 1925, $34,547,379. Plant Investment, $156,474,884.

The best service and most reasonable fares can be secured by the maximum use of the facilities by the population served.

The revenues of the Elevated are reduced when people use automobiles *when not absolutely necessary* or by people who give others rides.

This increases traffic congestion on the highways and places the burden of Elevated operating expenses on the remaining car riders.

Rapid Transit lines built at great expense are for the benefit of the community *as a whole.* The more they are used the better the service that can be rendered by the railway and the less traffic congestion will exist on the highways.

Secure all the fares, guard transfer losses, cultivate more riders. It's our business.

"A RIDE A DAY KEEPS POOR SERVICE AWAY"

To All 'L' Employees

Now is the time to sell our service

DURING the summer we carry 27,000,000 revenue passengers a month as compared with 35,000,000 a month in the winter.

But we have the "plant" to render service to as many people in summer as in winter.

Hence we must do all we can to *get business.* In the former days we had the problem of taking care of *business that came to us*, and the car driver in the old horse-car days was a salesman. He was as active as the "shoot-the-chute" ticket seller at the beaches. In these days people walk more; they use other forms of transportation more, especially their own automobiles. We must therefore exhibit salesmanship.

Get busy—be a salesman—boost your business.

Prosperity for your business is to the advantage of everyone connected with it as well as the people served.

If you go into a chain store to get something, the salesman always tries to sell you something in addition. He gets your money and closes his sale. He encourages you to come again.

We can apply the same principles in our business.

Show people why they should ride on the "L" instead of wasting gasoline in the downtown congestion.

Study out the routes where the "L" beats the taxi or the automobile and then talk about it. Tell the management, too, so that the best things can be advertised.

Sell your railway and its service this summer and be able to do business at the same old stand as do the people who keep your money in circulation. We have nothing to sell except more rides on the "L" system. Tell our customers about them; make them like the service and want to ride again.

Edward Dana

WHAT YOU OUGHT TO KNOW ABOUT THE SOUTH BOSTON POWER STATION

THE department of power has furnished the following facts regarding the great modern power plant at South Boston which supplies most of the power for operating the elevated system.

Location: The plant is on Boston Harbor opposite the United States Army base, on the site formerly occupied by the Lawley shipyard.

Area of property: The site covers 15 acres.

Capacity of present installation: The generating capacity is 120,000 kilowatts, or about 160,000 horsepower. The ultimate capacity, according to plans, will be double this.

To give you an idea of what these figures mean, note that if used for light and power purposes the plant would supply 2,400,000 50-watt lamps, or a "white way" of 100-watt lamps 100 feet apart 24,000 miles long, equivalent to eight completed transcontinental highways. It would operate 20,000 electric ranges; 800,000 vacuum cleaners; 240,000 laundry irons, or 520,000 washing machines. It would supply 120,000 homes with light and power, or a population of 600,000.

Dimensions: The present building is 374 feet long and 186 feet wide. Ultimately it will be 628 feet long. The floor area is over three acres.

The steel stacks are 228 feet and 355 feet high, above the ground, respectively, and 14 feet and 15 feet in diameter.

Materials used: The 3,100,000 bricks in the building would build 115 six-room dwellings.

The 15,000 cubic yards of concrete used in floors, walls and condensing water tunnels would make a 5-foot sidewalk from Boston to Lowell.

The 500 tons of steel rods used in reinforcing would provide a handrail and lamp posts along both sides of the above sidewalk.

The 2800 tons of steel used in the frame of the station would build twelve large passenger locomotives.

The iron conduit in the station would reach from Boston to Salem.

Equipment: The steam turbines are driven at 200 pounds pressure per square inch.

Over 1,000 lamps are used to provide light for the station and grounds.

Over 115 motors are required to operate the pumps, fans, coal handling apparatus, etc.

Nine transformers supply power for station use.

Coal storage is provided for over 100,000 tons. This is equivalent to 2,000 carloads or forty freight trains of fifty cars each. This is enough coal to heat the homes of the inhabitants of Brookline, Chelsea, Everett or Medford for one winter.

The steam, after passing through the turbines, is condensed to water in the condensers. Salt water from the harbor is used to cool and condense this steam.

Two hundred thousand gallons of salt water per minute under maximum conditions pass through the condensers. In twenty-four hours the amount ordinarily pumped will be greater than the total water supply for Boston and the eighteen cities of the Metropolitan Supply District for the same period.

The condenser tubes would stretch over a distance of 150 miles if laid end to end.

A cable railroad and endless belts carry the coal from the coal field to the supply bunkers at the top of the station, a distance of 1,270 feet.

Two and one-half million pounds of air per hour is used to burn 168,000 pounds of coal for the present capacity output. This is supplied by large draft fans. The amount is equivalent to 700 million breaths per hour.

All these figures given are based on present capacity.

JUNK

When you place your ash cans on the sidewalk to have the contents collected by the city or town sanitary department, you do not give much attention to a stray bit of copper wire, a piece of iron, or a strip of cloth which may find its way into the can, although there will probably be some one who will later retrieve these small bits.

A railway cannot be accused of being as careless in this matter as the average householder, for it obtains a considerable revenue by collecting its junk, or "scrap" as it is called, and selling it from time to time. The Boston Elevated Railway, in 1925, sold nearly 14,000,000 lb. of scrap material, consisting of over sixty-four different items, and received more than $175,000 for it. Even the ashes from the oven where insulation is burned from scrap copper wire are sold. This item, alone, brought $79.57. Newspapers collected at stations and carhouses were sold for $655.45. Other items, seemingly small but which go to swell the total amount, are: Boxes in which glass comes, bases of broken lamps and scrap rubber. Scrap rail is the largest of the items sold, but not the most valuable, and trolley and feed wire and other materials of copper are the most valuable. Wornout car wheels bring $16,000, brake shoes about $6,500, and gears and pinions $1,458.

GOOD HOUSEKEEPING

By the Safety Manager, United Electric Railways, Providence, R. I.

We all hate to be called poor housekeepers. Yet some of us are often bad offenders.

Trucks and materials left in the aisles are always unsightly and dangerous, and rubbish and waste material scattered about the plant and in the corners make fine places for fires and accidents. Good housekeeping is just as important in the shop as in the home. Perhaps more so, for larger numbers of people are exposed to the fire and accident dangers.

Contrary to general belief, good housekeeping is more a matter of supervision than it is a duty that is expected of the workers. Bad conditions in certain departments indicate but one thing—poor management.

A good slogan is "A place for everything, and everything in its place."

Won't you help to clean up and keep cleaned up?

IF—

(With apologies to Kipling)

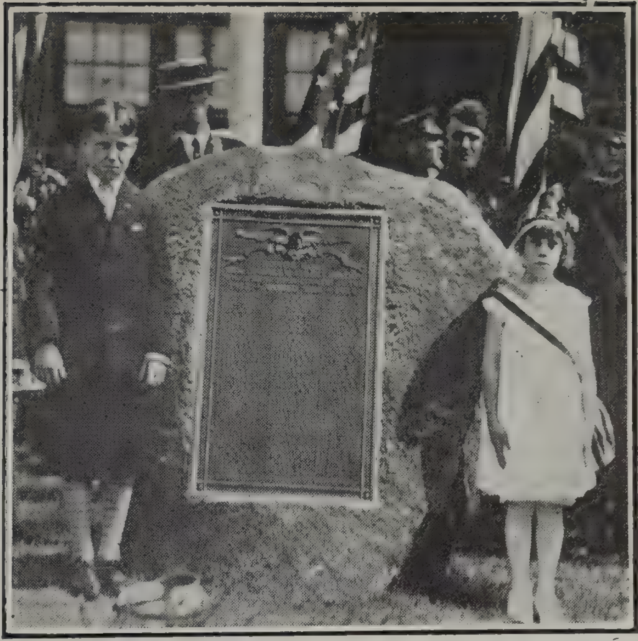
If you can keep your head when autos
all around you are losing theirs,
and running wild, leaving it to you—
If you can stop your car when there
is danger, and make allowances for
a slick track, too—
If you can cruise down Broadway, without a mishap
And then reach Tenth and not a fender
touch,
If you can make friends with your
patrons, and speak to them, but with
them none too much,
If you can see your schedule ruined by
a string of cars from six to ten
And when the jam is over
Pick it up again,
If you can give to every fleeting moment
Sixty seconds' worth of schedule run
You will never want for fruits of labor,
For you can street-car anywhere, my son.

—*Trolleygrams.*

It's surprising what an amount of nothing some people can accomplish.

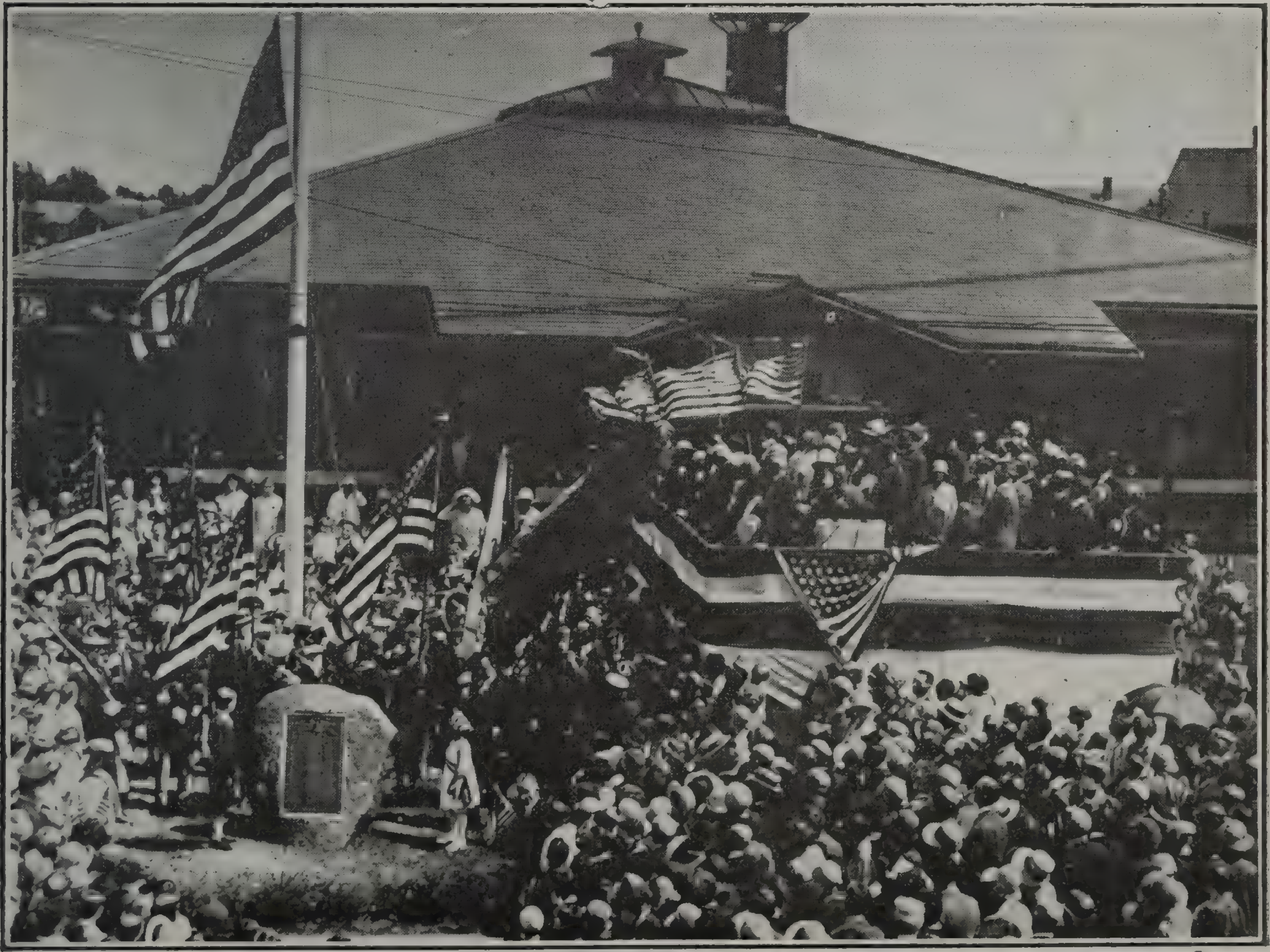
MEMORIAL TABLET UNVEILED

On Sunday, June 27, a memorial tablet was unveiled on the lawn of the Salem Street Station at Medford to commemorate the services of employees who served in the world war. More than a thousand persons witnessed the unveiling, which was preceded by a parade beginning in Medford Square. Represented in line were the following organizations from Medford, Malden and Everett: G. A. R. posts and auxiliaries; Spanish War Veterans, Veterans of Foreign Wars and auxiliaries, American Legion and auxiliaries, and Boy and Girl Scouts. Andrew S. Scott, superintendent of Division 4, was master of ceremonies. Rev. John J. Walsh gave the invocation after the raising of the flag and the renewing of the pledge of allegiance. John J. O'Neil and Mary M. O'Neil, nephew and niece of John J. Dunbar, one of the dead heroes, unveiled the tablet.



A SOUVENIR OF PATRIOTISM

Among the speakers were Francis J. Roche, chairman of the Cambridge school committee; Maj. Alexander A. Lucy, city auditor of Medford; George L. Stokell, commander of Samuel C. Lawrence Post 66, G. A. R., of Medford; Ed-



UNVEILING THE MEMORIAL AT SALEM STREET STATION ward Dana and James Smith of the Elevated; Legrand M. Thompson of the Spanish War Veterans; Dr. John F. Roberts of the American Legion, and William F. Shine of the Veterans of Foreign Wars.

The tablet is placed on a 3½-ton boulder and was subscribed for by men of the Salem Street Station. The committee in charge of the program included James F. Murphy, David F. Murphy, John Lemieux, Harry Needle and John I. Bannon.

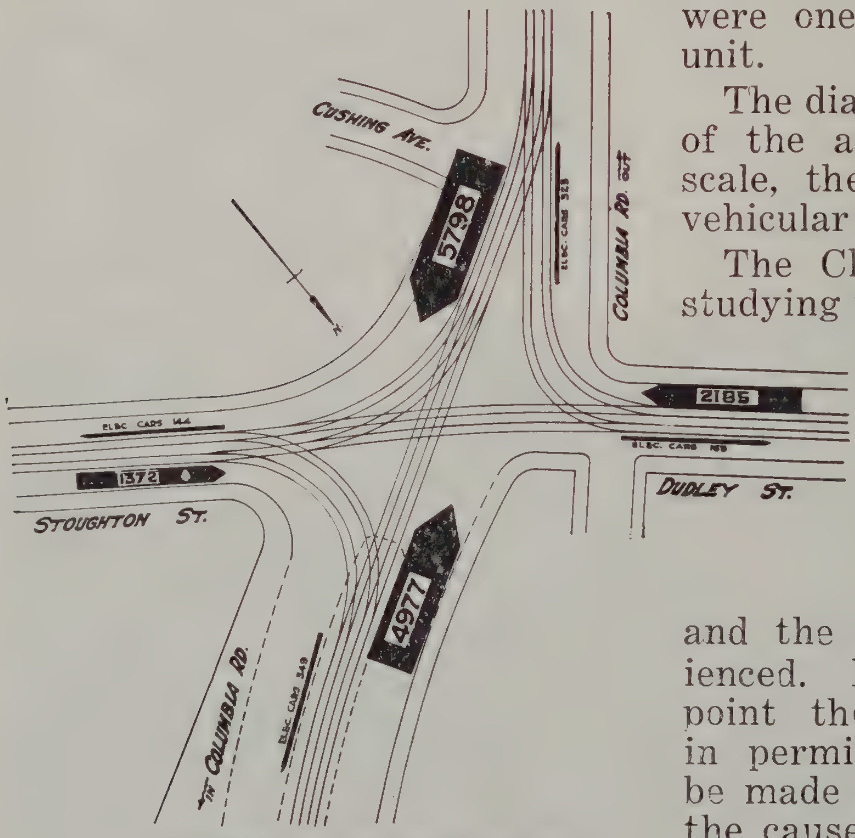
Music was furnished by the Immaculate Conception Band. Taps was sounded at the conclusion of the exercises by Ralph P. Ingalls of the Salem Street Station and Martin Evers of the I. C. B. Boy Scouts.

TRAFFIC CONGESTION AT UPHAMS CORNER

The Boston Chamber of Commerce recently made a directional traffic count at Uphams Corner, Dorchester, with the results shown in the accompanying diagram. You will be interested to compare this diagram with one shown on page 59 of the May "Co-operation." The count shows that between 8 a. m. and 6 p. m. on May 26 there were 14,332 vehicles moving in sixteen directions through the square, while a total of 979 street cars moved in eight directions. The average number of vehicles per hour was 1,433 and street cars per hour 97.9. Of the street cars, 883 were one-unit and 96 were two-unit.

The diagram shows by the width of the arrows, approximately to scale, the relative street-car and vehicular traffic.

The Chamber of Commerce is studying the points in the city that seem to cause traffic congestion. The lesson seems to be that street cars with fewer units and carrying more people are held up by the congestion and the public is thus inconvenienced. From the railway standpoint the information is useful in permitting an explanation to be made to the public of some of the causes of delay which are beyond the control of the railway.



TRAFFIC CONGESTION AT UPHAMS CORNER

THINK THIS OVER

The statement printed in the June "Co-operation" may well serve as a basis for our sales efforts. It gives us a yardstick by which to measure our achievement. Here it is again:

During 1925 the population served traveled upon the Elevated lines 300 times per capita—less than an average of a ride a day.

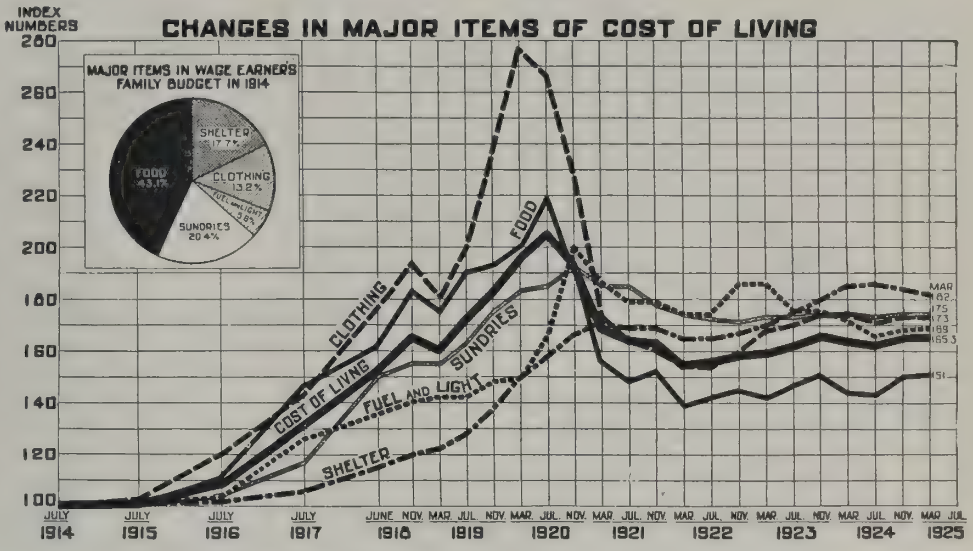
If the population served had traveled an average of once a day per capita, or 365 times, revenue would have been increased $7,300,000.

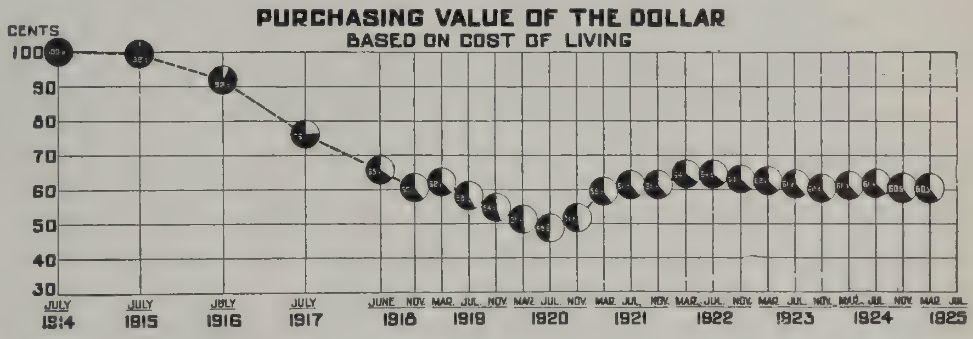
Improved service can be rendered if revenue is increased by such a sum as $7,300,000.

PRICES AND WAGES†

By L. R. Nash

THE difficulty of making ends meet, both on the part of individuals and of businesses, is greater than it otherwise would be because costs of living and wages fluctuate widely.





The "Cost-of-Living" graphs represent average changes in the cost of the five major items in the family budget, weighted according to the distribution of family expenditures of wage earners calculated for 1914. It is based on retail prices of commodities and cost of services to the consumer.

"Sundries" include household supplies, car fare, medical care, insurance, contributions, recreation, etc.

While the distribution of family expenditures may vary slightly because of changes in price levels and social and economic conditions, the change in the cost of living based on any such redistribution would not differ materially.

The lower diagram shows changes in the purchasing power of the dollar when spent for the same quality and kind of commodities and services as in 1914.

To permit the making of helpful forecasts it is desirable to have what are known as "*index numbers*" of these variables. An index number is one which expresses the relation of values or quantities at one time as compared with another. For example, an index number for cost of living for a certain month might be given as 150. This means simply that the cost is 50 per cent greater during that month than it was at some other time taken as unity, i.e., 100 per cent, the costs being calculated on the same basis in both cases.

Some Useful Index Numbers

Now what are some of the index numbers which are compiled regularly and are available to those who can use them? Among the most important are the following:

1. The index number of the Bureau of Labor Statistics is possibly the most important of all. This number is made up of prices of 404 commodities of all kinds that are in general use. They are "weighted" according to the quantities produced, i.e., unimportant commodities are given little weight and very important ones, like steel and wheat, are given large weight. The standard of reference is 1913 conditions taken as 100 per cent.

2. The monthly wholesale price index of the Federal Reserve Board is used largely by business men and bankers. It is based on 104 items, those whose prices are most sensitive to economic conditions. The Federal Reserve Bank of the New York District has an independent list, covering only twenty of the

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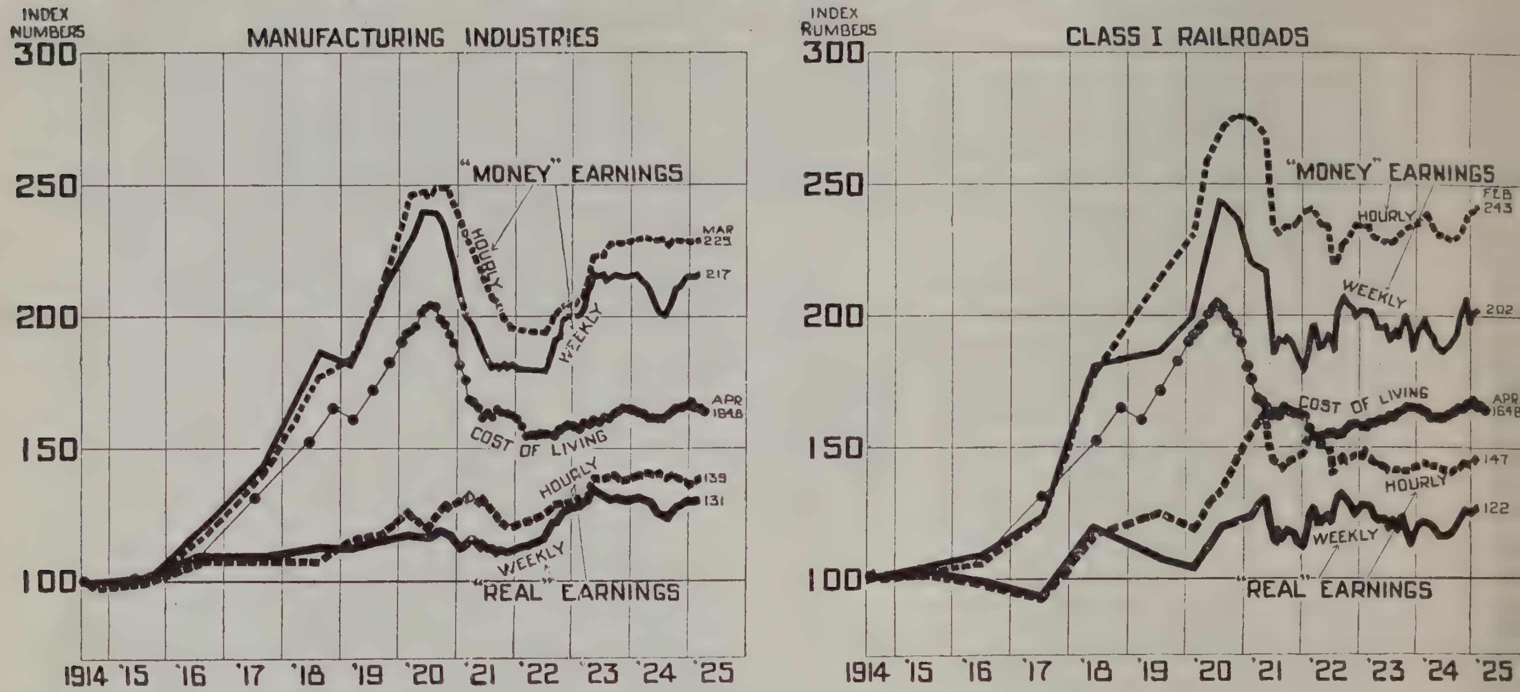
†Abstract of lecture delivered before the employees of the Boston Elevated Railway, under the auspices of the Massachusetts Department of Education, Division of University Extension.

"MONEY" EARNINGS AND "REAL" EARNINGS



(Copyrighted by National Industrial Conference Board)

In the above series of graphs, "Manufacturing" represents average hourly
and since June, 1920; and in eight major industries from 1915 to 1919. "Railroads"
"Anthracite Mining" represents average hourly earnings in 180 collieries with about
October, 1920, to October, 1921. For 1923 and 1924, figures are from current
to 1919, the trend is estimated from U. S. Coal Commission figures. "Building"
wages in building are only roughly comparable with other industrial groups
are given by years up to 1920, thereafter by months. "Real" earnings represent
index of "Money" earnings by that of the cost of living.

most important active commodities, like steel, flour, cement, etc.

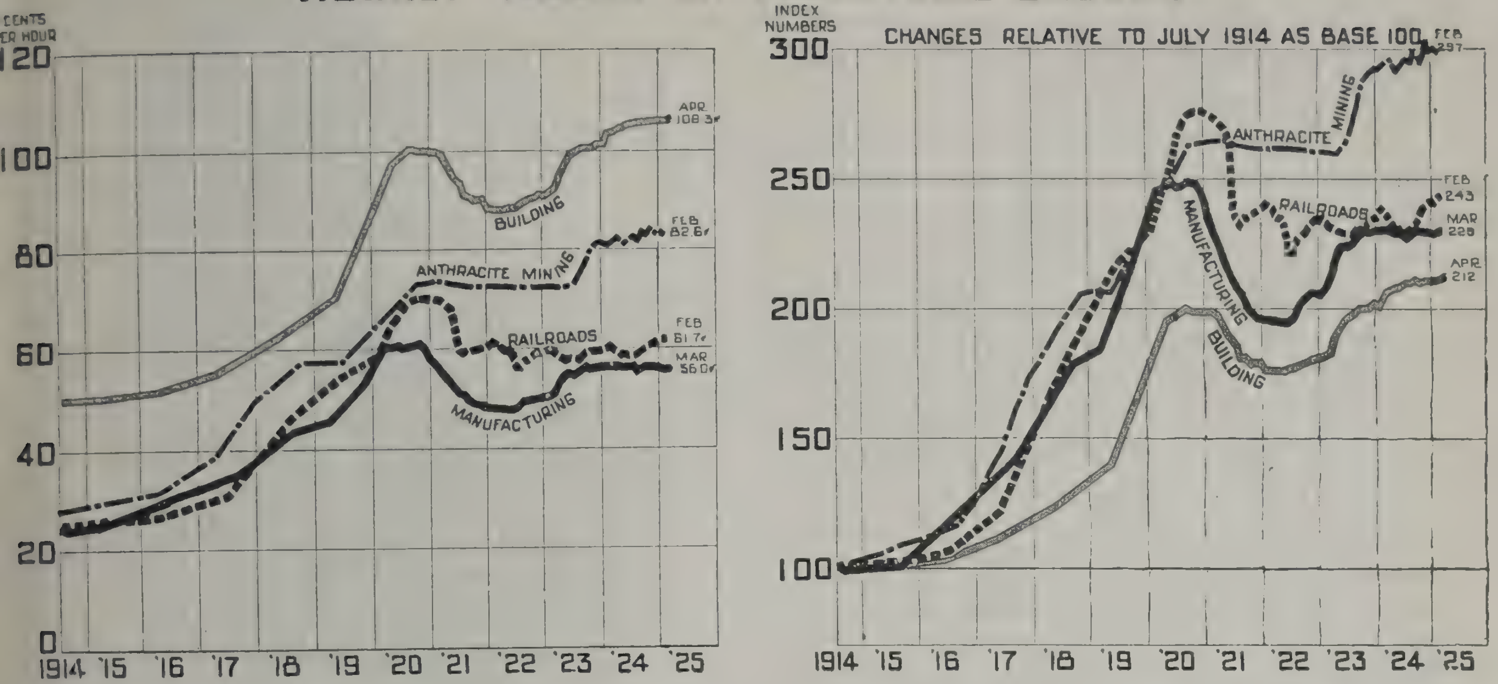
3. Dun's monthly index is made up from 300 items, by multiplying the price of each article at a given time by the quantity used per capita per annum, and adding the products. The result is not a true index number, but is the actual expenditure per annum for these commodities per capita. It has no relation to any fixed time. For comparison with other indexes, however, it may be noted that its value in 1913 was about $120.

4. Bradstreet's monthly index is somewhat similar to Dun's in that it is in dollars and not a percentage. It is the sum of the prices per pound of 96 articles. Its value in 1913 was $9.21.

5. The National Industrial Conference Board's index of the cost of living is the most used of the indexes in this field. The Board has divided the elements of the cost of living into these groups: food, shelter, clothing, fuel and miscellaneous. Each is assigned its proper weight. The data are secured from numerous and widely scattered sources. In one case, the item of "shelter" was based on rent data from nearly 500 agencies in all parts of the country. The Bureau of Labor Statistics has a somewhat similar index computed separately for about 30 cities and more particularly applicable to workmen.

The above are examples of a large number of indexes, others of which will merely be mentioned. The Harvard Economic Service has an index based on ten particularly sensitive basic commodities used largely in industry. It shows greater fluctuations than those based on a more comprehensive survey. Prof. Irving Fisher produces an index by using in special combinations the prices of various commodities compiled by others. The "Engineering News-Record" has issued since 1913 an index of construction cost data for the use of contractors in estimating building cost trends more closely than they could from a wider range of prices. The Aberthaw Construction Company, in Boston, has a somewhat similar index and the Associated General Contractors another. Stone & Webster have indexes for costs of public utility properties with the important combined elements set up separately. Prof. A. S. Richey, of the

HOURLY WAGES—BY INDUSTRIAL GROUPS



d weekly earnings of wage earners in 23 manufacturing industries for July, 1914,
resents average hourly and weekly earnings of all wage earners on Class I railroads.
000 wage earners, covering about 90 per cent of total output for 1914, and from
y reports and a special survey covering about 16,000 wage earners. From 1915
sents average hourly wage scale of 17 principal occupations in 23 large cities. Actual
based on rates rather than earnings and because covering only large cities. Figures
purchasing power of the "Money" earnings, and are ascertained by dividing the

Worcester Polytechnic Institute, has developed an index of electric railway costs based primarily upon operating materials, such as fuel, lumber, steel, etc. These are published with other indexes monthly in the "Electric Railway Journal." Then there are indexes of food costs prepared by the Bureau of Labor Statistics, the New York "Annalist" and Gilson in New York (published weekly.) Also, the Bureau on Labor Statistics compiles data on wages, which others use for preparing indexes. In addition there are indexes of production by different classes of commodities. There is no good index of retail prices as a whole, but the Bureau of Labor Statistics publishes figures on various foods in many cities.

Historically, records of prices go back to 1260, in England, with definite index numbers since 1800. In this country, through the Bureau of Labor Statistics and other agencies, statistics for over a century are available.

Price Indexes Have Lately Fluctuated Widely

Of particular interest, however, are recent values of price indexes. The National Industrial Conference Board index, for example, shows that in 1920, when the index was 247, prices were 2½ times what they were in 1913. By January, 1922, the index had dropped to 138; later it went to 159, then down to 152, etc. The year 1923 showed considerable stability, indicating the attainment of what may be called a new "plateau of prices" of fairly continuing character.

Wars previous to the World War caused similar price peaks. That for the Civil War was 237 and that for the War of 1812 was 250. Thus in a century there have been three great price peaks. The effect of the War with Mexico was negligible. In 1896 prices fell to 67.

In England there was an index basis of 100 established in 1600, not exactly like that referred to above, but near enough for practical purposes. In 1650 the index had risen to 165, falling to 100 again 40 years later. The Napoleonic wars put it up to 250, which was reached during the war between the United States and Great Britain. During the World War the price index in Great Britain went to 300.

The conclusion is that, taking a large-range view of wholesale prices, they have for centuries tended to gravitate to the 100 level, with fluctuations from time to time and with peaks at times of war.

As to the fluctuations in prices in times of peace, economists say that the quantity of gold available for use as money has much to do with it.

Effect of the Gold Supply

After the discovery of gold in California in 1849 and in Australia at about the same time, prices tended upward, but following the Civil War, when there was a downward trend in prices, it is a fact that the amount of gold was not increasing as fast as the population. During the nineties the new supply of gold from the Klondike, and the increased supply from South Africa, reversed the trend. The principal source of supply is now South Africa and it has been said that the present rate of production can be maintained until 1930, which means a maintenance of the present prices until that year.

H. P. Gillette, a well-known engineer, has evolved a formula for price estimating which involves four factors: The quantity of money in circulation and the population (together giving the money in circulation per capita), the rate of money turnover (which is the number of times a year that a given amount of money is used in different transactions), and the efficiency of production (an often overlooked but important element). By combining these four factors and using suitable constants the price level at any time may be predicted.

Wages Were Low in the Middle Ages

In the matter of wages, a little history will be of interest. In England from 1260 to 1600 skilled workmen got $1.50 per week, and not until after 1700 did they get up to $3. In 1800 the wage was $1 per day. The corresponding figure in the United States was $7 per week. Since then, wages for skilled workmen have been in close agreement in the two countries.

The wage index, with 1913 as a base of 100, reached a peak of 220 in 1920, and later fell to 200. The building wage index is about 10 per cent higher. Street railway wages rose to 218 and later fell to 207. At 70 cents per hour maximum the index for the Boston Elevated Railway is 242*.

But the changes in daily or weekly wage indexes do not tell the whole story with respect to unit costs of labor. In 1840 the average working day was 11.4 hours; in 1860, 11 hours; in 1890, 10 hours, and it is now moving steadily toward the standard 8 hours. Applying a correction factor it follows that the hourly wages have increased much more than the indexes show.

Purchasing Power of Wages

The particular feature of interest in this whole matter to the wage earner is how much he can purchase with his money. The purchasing power of wages is, of course, the ratio of wages to cost of living.

Taking 1914 as 100, the index of cost of living reached a maximum of 205 in July, 1920. In August, 1922, it had dropped to 155, and in November, 1923, it was 165. Comparing these values with those for wages it is clear that living costs are now proportionately lower than wages. With a country-wide scale of platform wages at 218, and a corresponding cost of living index, in general the purchasing power of street railway employees has risen 33⅓ per cent as compared with 1913.

Since 1860 the purchasing power of wages has increased from 2 to 2½ times, and as compared with 1600 from 10 to 12½ times. In other words, wage earners now command at least ten times as much of the comforts and advantages of life as were available in 1600. This ought to yield satisfaction, even if the individual still has less than he would like to have.

This increase has been due largely to increased efficiency in production. The use of machinery, the telephone and other modern improvements have all contributed, together with a greater utilization of natural resources.

Wages, Salaries and Return on Capital

An appropriate question at this point is: Have labor and capital received respectively their fair shares of the benefits from improved economic conditions? There is no question but that everyone has benefited by the improvement to some extent.

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*The later increase to 72½ cents raises it to nearly 251.

In studying this matter a book on "Incomes in the United States," published by the National Bureau of Economic Research, is of value. It divides the income from industry into two parts:

(1) Services, including wages and salaries;

(2) Property and management, including rents of lands, royalties on natural resources, and the return to people who have put their money into the industry and the surplus which they have left in.

These two groups may be called services and capital respectively.

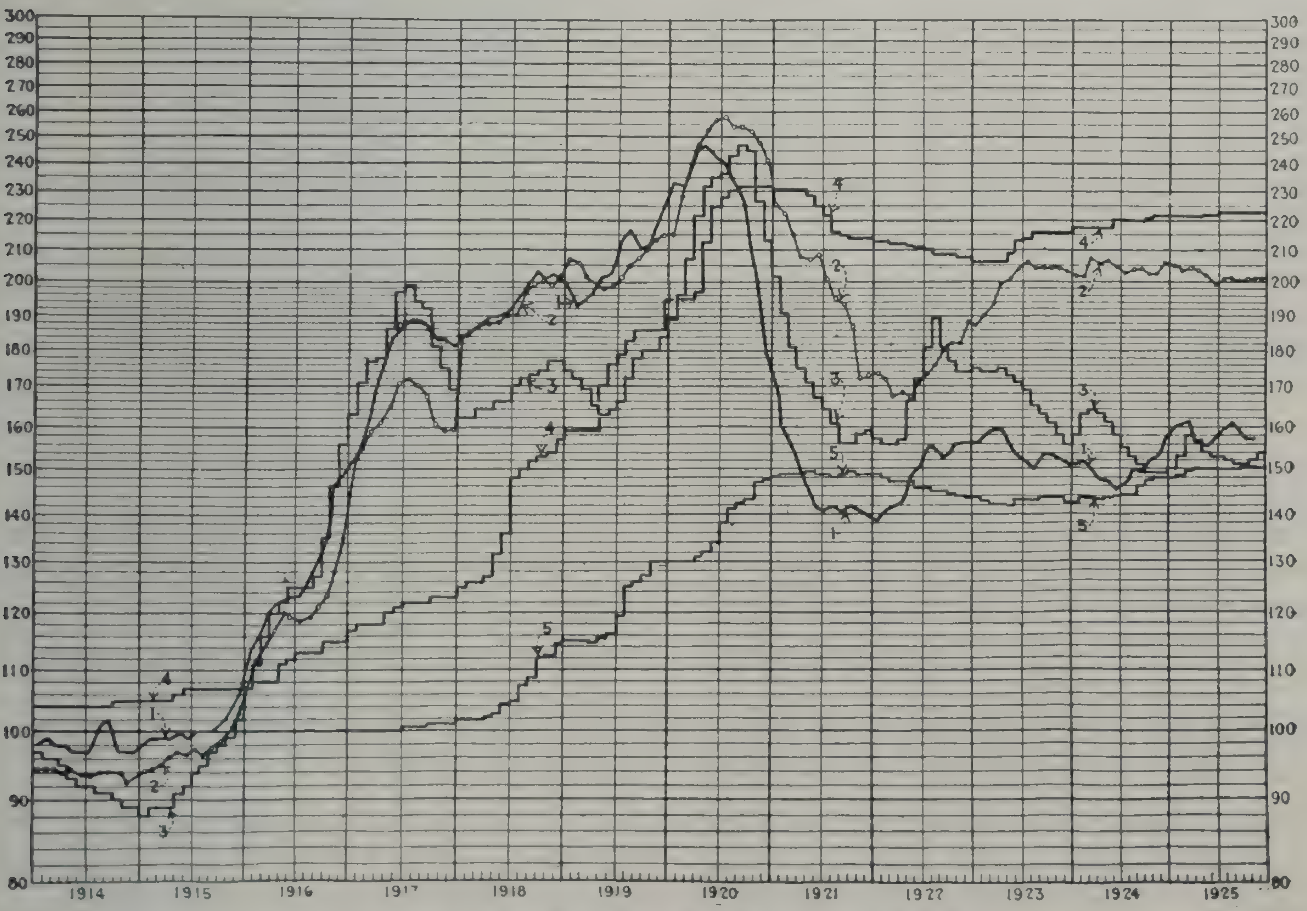
In 1909, about 69 per cent of the value of all production in this country was required for services and 31 per cent went to capital. In 1911 the former had increased to 72 per cent, and in 1914 to 74 per cent. There was a slight setback in 1916, an abnormal year, but in 1918 the percentage rose to 77. While the later figures are somewhat abnormal, it is true that about 70 per cent of the earnings of industry go for services and 30 per cent to capital, with a tendency toward an increase in the former.

Sub-dividing services into its component parts, salaries take about $1 out of each $14 total payroll. This $1 goes to superintendents, clerks, engineers and others, as well as executives. The remaining $13 is wages.

On the large steam railroad systems, salaries of $3000 and upward total only 1½ per cent of the entire payrolls. In the Bell Telephone System, if all officers' salaries were reduced to $5000, and the excess were distributed among employees, the amount would be but 22 cents per week per person. In the meat-packing industry, if food products were sold at bare production cost the reduction in food cost would be but 2 cents per month per capita.

Of the 30 per cent of production cost which goes to capital more than one-quarter is for rent, and royalties for use of natural resources. Less than 20 per cent of earnings is distributed to capital, which is not excessive, and the percentage is being reduced as investment risks decrease.

Capital puts back into industry for reinvestment $1 out of every $7 earned, increasing production capacity. This is



DATA COMPILED BY PROF. A. S. RICHEY

1—Wholesale prices of all commodities; 2—General construction cost index; 3—Electric railway operating material costs; 4—Electric railway wages; 5—Street railway fares.

necessary to keep up with increase in population.

Of the business of the country, 10 per cent is on the verge of bankruptcy; 40 per cent is barely making a living, and the remaining 50 per cent is profitable. The 40 per cent fixes prices and the efficient businesses take advantage of this to secure good profits.

There is a tendency toward equalization between wages and salaries on the one hand and the prices to be paid for capital (which is simply the product of past labor) on the other. This cannot be effectively disturbed by legislation. Neither labor nor capital can in the long run dictate terms. If, for example, excessive wages are demanded for coal mining, the resulting high prices of coal will induce the use of, say, oil for fuel. Excessive wages for bricklayers stimulated the use of concrete. High platform wages brought in the one-man car. On the other hand unduly low wages result in the loss of competent workmen.

At the same time workers ought not to be satisfied with their conditions in life; they should desire to get ahead. But this cannot be done by mere wage increases, for this increases costs all round. The thing works in a circle. Living standards can be raised, however, by various means. One of these is better co-operation between trades and industries, in order to permit men to work more continuously, the same man at different trades if necessary. Idleness is expensive and demoralizing. Again, distribution could be simplified to reduce living costs.

The greatest opportunity for decreasing prices and increasing standards of living, however, is afforded by greater production. If there were twice as much goods available, the goods could be bought at one-half present prices. For years before 1890 production increased 3 or 4 per cent a year, but conditions have not been so good since. Production has been artificially curtailed by short working days and limitation of output with corresponding increase in cost of living.

By way of references, "Incomes in the United States" has been mentioned in this article, and M. C. Rorty's "Some Problems in Current Economics," in an earlier article. Then, Adam Smith's "Wealth of Nations," written in 1776, anticipates, to a remarkable degree, the best modern thought on economic laws and procedure. Bulletin 284 of the Bureau of Labor Statistics, issued October, 1921, gives the history and principles of index numbers, and many data on wholesale price levels.

WE'RE THE BOYS WHO TAKE THE CAKE

By H. V. Neal, Albany Street Shops

They may tell of other countries and the wondrous things they do
But I want just to remind you that we know a thing or two;
Tho' we always mind our business and we have no time to brag,
We are mighty independent here beneath the starry flag;
We have noble men in plenty, and we don't need dukes or earls,
We have boys both brave and loyal, and we've lots of pretty girls.
We have workmen neat and handy, and no matter what they make,
If there's all the world competing, we're the boys who take the cake.

CHORUS

Then hurrah for hustling Yankees, we're the boys who lead them all,
We can run, or row, or wrestle with the Briton or the Gaul,
We've got brains and grit to back it when there's anything at stake
You can bet your bottom dollar we're the boys who take the cake.

They may talk of guns and gunners and warships if they please,
And we always keep them handy, just the best that sail the seas,
They may build their yachts to beat us, but they're always left behind
For our boys on land or water are the best the world can find;
Oh, our airships go to conquer and they take one thing unfurled
And they plant the starry banner on the top of this old world,
So we're always up and doing, and we're always wide awake,
If there's anything worth having, we're the boys who take the cake.

GIVE THE TROLLEY CAR A CHANCE

"No matter what your theories or beliefs may be on the subject of traffic congestion, you must recognize the entire situation from curb to curb.

"In some cities in the United States the trolley car has never been allowed to develop its greatest efficiency. It is a better vehicle than most of us think it is because we have never had the chance to see it operate at its best. Give the trolley car the chance it has been yearning for and you automatically put the motor bus in its best environment." —*Indianapolis Star.*

STATION Y. O. U.

"Mr. Edward Dana, General Manager:

"Dear Sir: Having just read this bit of advice published by the "Telephone Review," which I think serves as a means to overcome the friction of everyday life, I thought it would especially help all uniformed men of the Boston Elevated and would read well in your monthly publication, "Co-operation," if their courtesy would allow you to copy it should you care to do so.

One of the "L" Conductors.

(The editor of the "Telephone Review" gladly gave permission to reprint this article.)

"Have you ever stopped to think of yourself as a radio, as a sending and receiving station? It is what you radiate every day that is picked up by those who come in contact with you, either face to face, or over the telephone.

"If the human radio sends out cheerfulness, the waves of cheerfulness are picked up, amplified, and broadcast, with wonderful results. Consider the effect of broadcasting the 'voice with a smile.'

"Keeping this thought in mind, 'tune in' at the beginning of each day to receive and to broadcast co-operation, courtesy, accuracy and speed and you will find at the end of the day that you have gathered to yourself large quantities of that which is priceless: contentment and charity."

MERIT RECOGNIZED

H. L. Carter, Motorman 4160, Eagle Street Station, who has been in the Elevated service for twenty-one years, was recently presented with a $10 gold piece by the teachers of the Summer Street School, East Boston, to show their appreciation of his courtesy during the past winter. This gift was accompanied by the following verse:

"Mid snow and ice, rain and hail,
You've waited for us without fail.
So just a token before we're through,
To show how much we thank you."

SALESMANSHIP

Street-railway employees are told by their employing managements that they are salesmen. The employing managements endeavor to educate the street-railway employee in line with the idea that he is a salesman. What does he sell? He sells the salable business of the employing property. He sells the product of his own work. It is important, both to himself and the employing property, that he should be a good salesman. Individually, he contributes but little in acquiring custom for the employing property. Associated with his associate employees in a fair, co-operative spirit in advancing salesmanship and the solicitation of custom, he can promote the business of the employing property. Associated with his associate employees he can advance the sale price of his own product of his own labor. It requires organization and mutual endeavor.—*Exchange.*

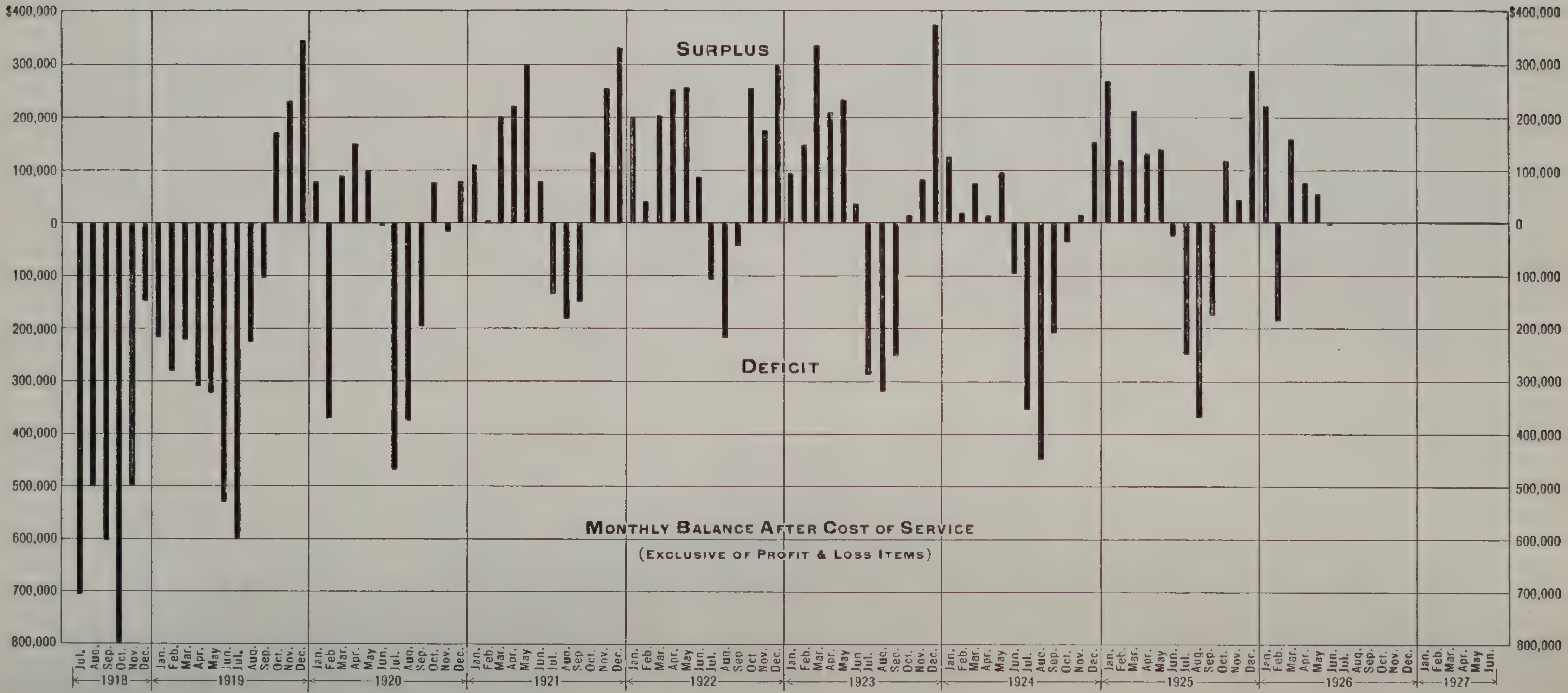
GOOD WORK AT THE SOAP FACTORY FIRE

About 10 p. m. on June 29 a fire was discovered by Night Foreman Michael Rutledge in the soap factory behind the Watertown carhouse. He immediately turned in an alarm and the following men promptly responded: Asst. Foreman F. McCarty; Shifter C. Gallagher; Watchman J. Murphy and Car Cleaners M. H. Mitchell, D. Connors and J. Donovan, and Car Cleaning Inspector Edward McCabe. Carhouse Repairmen W. W. Higbee and A. E. Smith, and Shifter H. Segreve, who live nearby, also assisted at the fire. Seven lines of hose were laid before the fire department arrived, three from the roof, three in the carhouse and one in the yard, and water was played on the building for an hour. The carhouse was saved, with some damage to the rear windows and a few trailer cars. The intense heat finally forced the men from the roof to the ground. The Watertown Fire Department warmly praised the Elevated employees for their splendid work in saving the carhouse.

PULLMAN SAFETY DRIVE

As noted on page 68 of the June "Co-operation," the Pullman Company recently conducted a safety campaign of which results are now available. In May (the month of the drive) there were no injuries to conductors, no lost-time accounts in the five repair shops, only 207 hours lost from yard injuries, and only thirteen injuries to porters (most of which were due to causes beyond control). The 2,950 conductors, 11,412 porters, 4,859 shop employees, 7,890 yard and stockroom employees, 498 laundry employees, 1,774 district and Chicago office employees, worked a grand total of 8,210,236 hours including lost time of 1,566 hours.

The lost time is 0.019 per cent of the total, or 1 hour in 5,250.



THIS DIAGRAM TELLS OUR FINANCIAL STORY IN GRAPHICAL FORM

(See article opposite)

BALANCING THE BUDGET

Under the terms of the Public Control Act, the trustees of the Boston Elevated Railway are required to "balance the budget" every year. They must set the rates of fare so that the revenue will at least meet the cost of service. If there is any surplus it is returned to the municipalities which advanced money during the first year after the trustees took control. Ultimately the surplus will be available for reducing fares.

Month by month, on the last page of "Co-operation" there has appeared a chart showing the condition of the reserve fund, which is normally $1,000,000. Above the chart is a table giving the excess of revenue over expenses or the reverse. On the opposite page this information is shown in graphic form for the entire period of trustee operation, to the end of the present fiscal year. The chart tells the story in a form which will repay careful study by every employee. It will be interesting to compare it with the monthly data and diagrams referred to above.

SEATS

Few people realize, when riding in a street car during rush hours, the honest endeavor of the railway to furnish every one with a seat. If any one told you that the Boston Elevated Railway furnishes daily a seat for every passenger on the surface cars, would you believe it? Let us look at a few facts.

The Boston Elevated carried 365,036,286 pasengers in 1925, or an average of 1,000,000 passengers daily. The following figures show that considerably more than this number of seats were furnished:

The combined seating capacity of all our cars is 109,538, so that 219,067 persons can be seated on every round trip; one-half inbound and one-half outbound. As our cars average eight round trips daily, we can furnish seats for 1,752,608 persons. While this should be reduced somewhat by cars out of service, it is safe to say that if more people who could do so would arrange their hours of travel in the periods outside of rush hours, they could do much for the comfort of car riders. The extent to which people have to stand depends entirely upon the shortness of the period within which the greater number desire to travel. With the same number of cars as are now in service, under ideal distribution of traffic, every one could have a seat.

WINS ALERTNESS CONTEST

The alertness contest in the wire and conduits division of the power department, described on page 69 of June "Co-operation," was won in June by the emergency crew at the Grove Hall Station in Division 1. The crew was in charge of Patrick Gill, head lineman, and comprised also Thomas Dunlap and Patrick Norton.

SAWDUST

From 14,000 to 16,000 bushels of sawdust are used annually on the Boston Elevated Railway System, principally on elevated and subway station platforms and stairways. This sawdust is supplied from the Everett shop mill room.

A timekeeper of a negro extra gang on the Missouri Pacific, asked a new hand his name.

"George Washington, sir," replied the new man.

'You're not the man that cut down the cherry tree, are you?" joked the timekeeper.

"No, sir. This is the first work I'se done for over a year."—*Railroad Man's Maagzine.*

"Find a business man, whether young or mature, who studies the best books and periodicals dealing with his business," says B. C. Forbes, "and you can safely conclude that he is likely to make headway."

CHANGES IN THE RESERVE FUND

Fiscal Year 1924-25

July 1, 1924, $1,000,000

July	**$353,245.79***	Jan.	$269,649.08†
Aug.	**445,820.47***	Feb.	118,183.05†
Sept.	**207,334.30***	Mar.	211,955.71†
Oct.	**36,155.55***	April	130,636.68†
Nov.	15,031.47†	May	139,081.44†
Dec.	152,527.52†	June	**25,792.94***

Profit and loss credit....$ 51,865.43

Fiscal Year 1925-26

July 1, 1925, $1,000,000

July	**$249,477.93***	Jan.	$223,301.90†
Aug.	**367,593.94***	Feb.	**185,989.63***
Sept.	**176,763.97***	Mar.	161,772.65†
Oct.	117,703.96†	April	77,031.69†
Nov.	45,265.00†	May	57,010.06†
Dec.	289,347.71†	June	**$1,662.18***

Profit and loss credit.....$32,359.07

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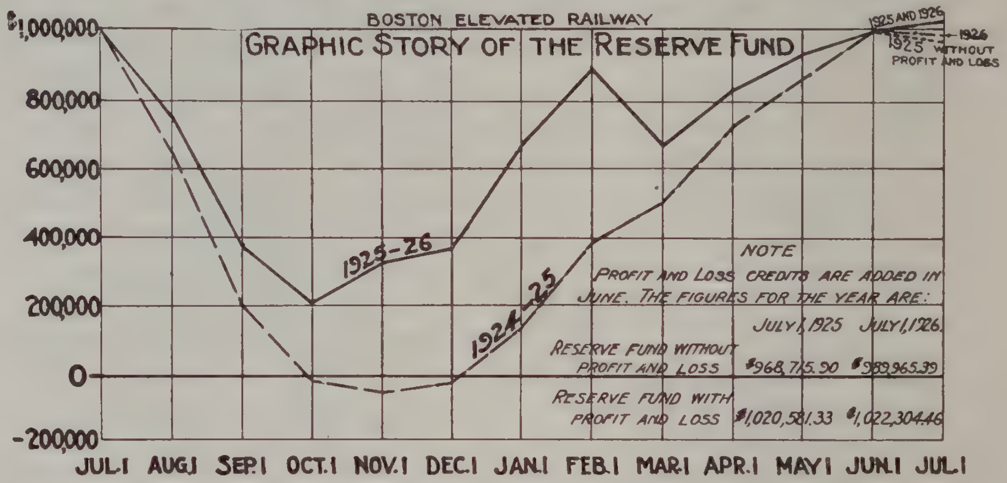
†Excess of revenue over cost of service. *Excess of cost of service over revenue



JUNE OPERATION

GENERAL FINANCIAL DATA	1926	1925
Cost of service exceeded revenue	$1,662.18	$25,792.94
Operating revenue per car-hour (A. E. R. A. std.)	$5.67	$5.52
Operating revenue per car-mile operated	58.54c	60.29c
Average fare per revenue passenger	9.284c	9.279c
Ratio operating expense to operating revenue	71.38%	72.40%
PASSENGERS CARRIED		
Revenue passengers	29,831,144	29,247,229
Per cent 5c and 6c passengers	17.43%	17.33%
Revenue passengers per car-mile operated	6.112	6.376
OPERATING FACTS		
Trips operated	635,014	598,544
Car-miles operated:		
Rapid-transit lines	1,256,786	1,221,409
Surface, two-man	2,004,188	2,049,561
Surface, one-man	1,210,184	1,107,120
Express, newspaper and sprinkler cars	5,650	8,558
Motor bus	404,352	200,546
Total miles operated	4,881,160	4,587,194
ACCIDENT DATA		
Accidents per 10,000 car-miles	2.10	2.28
Accidents per 10,000 bus-miles	4.43	5.68
Revenue passengers carried per accident	26,600	26,200
Average number of witnesses per accident	3.7	3.5
COMPLAINTS AND DEFECTS		
Complaints in regard to car service	8	9
Employees complained of by car riders	85	109
Car defects reported per 10,000 car-miles	3.7	3.5
INFORMATION ABOUT POWER		
D.c. kw.-hr. output gross per month	17,243,970	16,976,245
Maximum kw. load	60,260	60,050
Tons of coal consumed	15,506	14,578
Lbs. of coal burned per d.c. kw.-hr. at cars	2.019	1.929
Oper. and maint. cost, including depreciation:		
Per d.c. kw.-hr. for car service	1.085c	1.162c
Per revenue car-mile	3.85c	4.16c
Kw.-hr. per revenue car-mile	3.548	3.579

July 21, 1926. EDWARD DANA, *General Manager.*

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BOSTON ELEVATED RAILWAY

CO-OPERATION

Volume 5 AUGUST, 1926 Number 8

INCREASE CAR RIDING

Modern rolling-stock is necessary to provide adequate and dependable car service.

New rolling-stock costing $13,905,935 has been placed in service on the lines of the Elevated since July 1, 1918, as follows:

35	Cambridge Subway cars	$657,597
48	East Boston Tunnel cars	889,390
65	Elevated cars	1,305,698
296	Center-entrance cars	4,108,593
46	Trailer cars	317,518
461	Double-end surface cars	5,344,857
184	Single-end surface cars and buses	1,282,282
1,135		$13,905,935

There are 82,450 electric passenger cars in operation in the United States.

28,085, or 34 per cent, are over 20 years old.
30,685, or 28.7 per cent are between 10 and 20 years old.
23,680, or 37.3 per cent, are less than 10 years old.

On the Boston Elevated approximately 46 per cent of the cars have been purchased since 1918 and the average age of all cars is only nine years.

The rapid-transit lines have 79 per cent of the service operated on the Boston Elevated with all steel cars; Philadelphia has 100 per cent; New York 50 per cent; and Chicago 24 per cent.

In 1918 the cars out of service for repairs amounted to 17 per cent, whereas in 1926 only 6 per cent are under repairs.

The total of reported car defects for each 10,000 miles operated is only 5.3 at the present time.

Secure all the fares, guard transfer losses, cultivate more riders. It's our business.

"A RIDE A DAY KEEPS POOR SERVICE AWAY"

To All 'L' Employees

NOW is the time to plan ahead in order that the ninth year of public control may end successfully on June 30 next.

To accomplish this we should concentrate upon keeping operating expenses within revenue by efficient and economical operation during the next ten months.

Exert every effort to increase revenue by rendering courteous service and displaying real interest in our patrons and the problem can be made less difficult.

The degree of success will be governed by the extent to which we "follow the ball" daily and weekly until June 30 next.

This year calls for the best our organization can give.

Edward Dana

RAILWAY SELLS GROVE HALL CARHOUSE PROPERTY

On June 8, 1926, the Boston Elevated Railway sold nearly all of the land with buildings comprising the Grove Hall carhouse site of more than four acres. About one-fifth of an acre with an emergency-truck garage was retained. The garage was constructed during 1920 and 1921.

Interest in this historic property dates back to 1872, when part of the land was purchased from various owners by the Highland Street Railway which operated from this point via Shawmut Avenue to Temple Place, Boston. In 1886 this railway consolidated with the Middlesex Street Railway as the Boston Consolidated Street Railway and the next year the West End Street Railway assumed control of the property. The latter was leased to the Boston Elevated Railway December 9, 1897, and consolidated with it June 10, 1922.

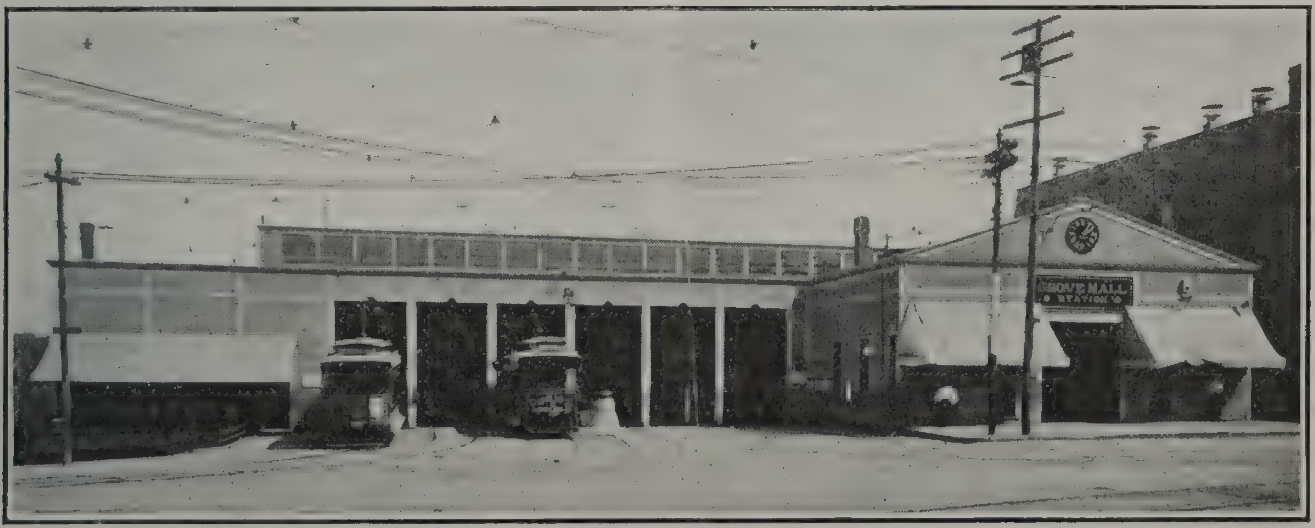
There have been and are several buildings on the property. Facing on Blue Hill Avenue was formerly a large frame and brick carhouse, the frame part of which was erected in 1890 by the West End Street Railway. The brick part was a stable belonging to the Highland Street Railway. In 1922 the front area of the carhouse was reduced by nearly an acre and the front shown in the photograph disappeared. The property also contains substantial buildings formerly used for carhouse purposes and shops.

CIRCUS TRAFFIC EASILY HANDLED

For a great many years back when the circuses came to Boston they exhibited on the old Huntington Avenue Grounds, formerly owned by this railway. Through the march of time, building operations encroached upon this land and other property near the heart of the city to such extent that locations farther out had to be taken. Hence for the past two years the Barnum & Bailey-Ringling Brothers circus has been held on the playground at Sullivan Square, while some of the other circuses last year utilized space similarly located near Andrew Square Station.

From a transportation standpoint, such locations near the outlying terminals of the rapid-transit lines are ideal for moving the large numbers of patrons to and from the circuses conveniently and economically. The riding to and from the performances is largely in the opposite direction from the

(Continued on page 98)



FORMER BLUE HILL AVENUE FRONT OF GROVE HALL CARHOUSE

ELEVATED HAS RELIABLE POWER SUPPLY

363 Minutes Loss of Power on Boston Elevated Out of 4,000,000 Minutes Since July 1, 1918

On Feb. 24, 1925, at 10:43 a. m., an unfortunate accident in the high-tension cable room caused a loss of power on the Boston Elevated Railway for three minutes on the entire system and for 29 minutes on portions of the system. Approximately 25,000 passengers, or 2½ per cent of the total daily traffic, were inconvenienced to a greater or less degree by this mishap.

Since that date, 16 months ago, there has not been a system loss of power, with the resulting inconvenience to car riders.

Because of the misunderstandings with regard to the power supply of the Elevated and its most creditable performance over a long period of years, it has been suggested that information about this part of the Elevated system, which is figuratively speaking "behind the scenes," would be interesting.*

The development of power generating machinery from the belt-driven generator of 36 years ago, which could not produce sufficient power to operate one Cambridge subway car today (less than 80 kilowatts), to the present-day turbo-generator producing 40,000 kilowatts and large enough to carry the entire system of surface, elevated and subway lines on Sundays, has been a monument to the genius of mechanical and electrical engineering. The power system of the Boston Elevated represents today an investment of $24,500,000.

CAN YOU VISUALIZE THESE FIGURES

Think of a single generator carrying the entire Elevated load, and doing the work of 167,000 buses. The outside rim of the revolving blades of this generator rotates at the rate of 625 miles per hour—a speed greater than the fastest aeroplane. Imagine the generating station at South Boston using a volume of water from Boston Harbor each year, condensing the steam, equal to the entire capacity of the Wachusett Reservoir of the Metropolitan Water System.

A pound of coal has energy enough contained in its dark form to lift itself 4000 miles into the air. The task of a modern generating station such as the one at South Boston is to burn 165,000 tons of coal and reclaim the energy imparted to the coal years ago by prehistoric suns at high pressure and great heat. It converts this energy into electrical power at 13,200 volts and then distributes it over an area of 92 square miles, so that by the turn of a small handle on a street car it may be of service to Metropolitan Boston.

The copper in the generating and distributing system of the Elevated weighs 7000 tons, or in terms of cars, has an equivalent weight of 439 modern electric cars. Only those familiar with power generation on such a tremendous scale can appreciate the energy and forces which modern science has made it possible for us to control and make available for the comfort and convenience of the community.

THE ROUTE OF THE ELECTRIC POWER

It is of interest to trace the course of power from its source to the operation of cars, as follows:

It is generated in large turbo-generators at 13,200 volts; delivered to high-tension buses through oil switches, and carried by cables 2¾ inches in diameter in underground conduits to the 16 substations, through 144 miles of underground cable. At the substations it enters transformers and the voltage is reduced to approximately 430. Then it enters rotary converters, where it is converted to direct current at 600 volts. From the rotary converters it is carried to the direct-current bus bars and then out through individual cables to the direct-current feeder sections which are connected with third rail or trolley wire.

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*See also article in July "Co-operation," page 75, entitled, "What You Ought to Know About the South Boston Power Station."

Of the individual feeder sections from which the trolley cars and trains take their current there are 75 sections on the surface lines, 19 sections on the rapid-transit lines and 11 sections in subways.

EDISON FURNISHES STAND-BY LIGHTING SERVICE

The lighting in the subways is entirely independent of the operating system. Besides being segregated in this way as far as the Elevated's own current is concerned, in case of failure of the Elevated power, automatic switches transfer the lighting load to the Edison Company. Thus the possibility of failure of lighting in our subways is very remote.

HEATING OF CARS COSTS MONEY

Few people realize the amount of energy required in winter to heat our cars. The latest type of cars, the so-called "No. 5's," have 12 kilowatts of heater capacity. In the peak hour nearly 20 per cent of the generating capacity is necessary to heat cars. In other words, one of the big 15,000-kilowatt turbo-generators at South Boston is required for this purpose alone.

DUPLICATION OF POWER SYSTEM IS NOT FEASIBLE

The suggestion that, as the railway is so important to the community, there should be a duplicate power plant, is manifestly impracticable. The addition of $1,500,000 annually to the operating costs would be a burden far more serious than the occasional delay caused by power failure. We must, therefore, depend upon engineering efficiency. Any machine, such as a bicycle, or an automobile occasionally develops trouble. The aim of the modern inventor is to reduce the possibilities of trouble to the minimum attainable.

Every year additional safeguards are adopted and modern invention is constantly reducing the probability of failure in the various branches of power generation and transmission. When a power difficulty arises the reason for the difficulty is for the moment of secondary importance. Out of the confusion and excitement comes an intense activity to do everything possible to restore normal service; study of the cause and report thereon come afterwards.

99.99 Per Cent Reliable

Since July 1, 1918, when the Public Trustees of the Elevated assumed responsibility for the operation of this great system, until March 1, 1926, over 4,000,000 minutes have ticked away. There have been only 35 instances of temporary power difficulties, totalling 363 minutes, or less than 1/100 of one per cent. Some of these mishaps were caused by mechanical or electrical failures, others by human error.

It is manifestly impossible for those engaged in the operations thus made necessary to have exact knowledge as to the cause or the length of time the trouble may be likely to exist. They have but one problem for the moment, namely to reduce to a minimum the delay and inconvenience caused by the power difficulty.

That the power supply will not be off long in an emergency is assured by the record displayed in italic type in the center of this page. There has been but one minute of delay to 12,000 minutes of operation.

WHAT IS ACCIDENT PREVENTION?

Recently an examination was held as a basis for the selection of car, train and bus men who will represent the railway at the National Safety Congress this fall. Among the questions was this one: "What do you understand by accident prevention and why is it so necessary these days?" Many of the answers reflect a clear understanding of the subject and an earnest intention to prevent accidents that cannot fail to redound to the advantage of the men, the public and the railway. Some excerpts from the answers follow:

"It means to reduce the number of accidents. Conditions are worse now than ever."

"We should always be careful and watchful. It is necessary on account of the carelessness, recklessness and fast driving of some automobile drivers."

"Accident prevention is to use all means in my power to prevent accidents, in these days especially when there is such congestion of traffic and injuries are so expensive."

"On account of the large number of automobiles on the streets and the careless and reckless way they are driven by irresponsible persons it is necessary to be more careful."

"On account of the many fast-moving vehicles in the street, try to prevent as many accidents as possible, stop pain, misery and loss of lives, and save expense connected with accidents."

"Accident prevention is to try to reduce accidents, to teach people to be careful, as there are a great many people and children killed and injured; and also so many fast-moving vehicles on the streets today."

"Accident prevention means to stop accidents or if possible to keep from having accidents. It is necessary because of the increase of traffic of automobiles and other traffic and because of the carelessness of the public in general."

"Accident prevention means concentration of mind and thought on the work I am performing, to be alert at all times for the carelessness of others, and not to assume any thought of right-of-way when that assumption might cause an accident."

"Accident prevention means to avoid all the accidents we possibly can, on account of congested streets with all the automobiles and machinery of all kinds, and on account of all the sufferings and death and waste of money to take care of the same, it is up to each person to use care and good judgment at all times."

"Accident prevention keeps a railroad man on the job because the public and automobiles are moving much faster today and there is more traffic on the highways than ten years ago. People are more careless, and they see so many automobiles that they get bewildered and run and don't look where they are going."

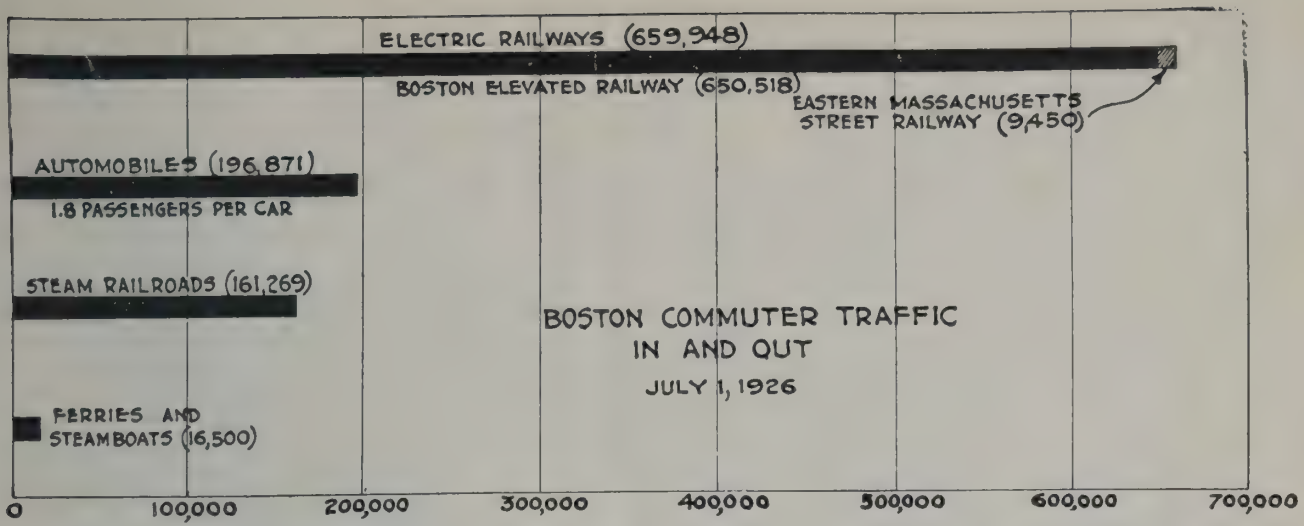
"Accident prevention is a study of unsafe practices and conditions, in order that men, women and children may be saved from injury and possible death; also to eliminate damage to property as far as possible. These conditions have been brought on us by modern inventions, speeding us up to a rushing, dashing way of living."

"Because there have been about 80,000 deaths annually in this country and over 500,000 injured, accident prevention is being studied by the press, the churches and the schools, and organizations and even the local and national government. There is also the waste of money. Yearly cost of accidents in this country is over a billion dollars."

"As it is estimated that 90 per cent of the accidents occurring on the highways are avoidable, strict attention to rules and instructions offered by societies formed for accident prevention are necessary. The great number of vehicles on the streets at the present day and the speed at which they travel call for greater care in operation."

"Accident prevention to me means safety at all times, on, off and around the cars, buses or trains. It means that I have to think for the other fellow to save him from harm. In these days of speed and hurry the traveling public do not think until they are hurt, and it is the duty of all employees to think for them. Their minds are set to get somewhere; our minds are set to get there, but safely."

"Accident prevention is a movement carried on by national, state and city organizations and by our own company to prevent accidents, fatal or otherwise, to ourselves or to the public. It is very necessary because every year means 80,000 deaths of men, women and children through accident; 500,000 seriously injured and 1,500,000 injuries of some kind in United States alone, and costs over a billion dollars, our company contributing almost a million dollars a year."



"EL" CARRIES THE PEOPLE

On July 1 the Boston Chamber of Commerce and the City Planning Board made a count of all people entering and leaving the city by conveyance between 8 a.m. and 6 p.m. The result is shown diagrammatically to scale below. Employees of the Elevated particularly will be interested in the fact that the railway carried nearly 70 per cent more than all other means of conveyance combined, including the Eastern Massachusetts Street Railway. Put into the form of percentages, the data in the diagram appear thus:

MEANS OF CONVEYANCE	PER CENT OF TOTAL
Boston Elevated Railway	62.9
Automobiles	19.1
All steam railroads	15.5
Ferries and steamboats	1.6
Eastern Massachusetts St. Ry.	0.9
Total	100.0

The detailed results of the traffic counts for the Elevated System, with which have been included the results for the Boston & Worcester, which carries few passengers into and out of the city, are given below:

Passengers Entering and Leaving Downtown Section Via Buses, Surface Lines and Subways, 8 a. m. to 6 p. m.*

Checking Point	Route	Inbound	Outbound
Cambridge Bridge	Cambridge subway	56,620	51,183
	Main St. to Bowdoin Sq. (bus)	1,681	1,520
	Boylston St. bus	2,130	2,144
Boylston and Arlington Sts.	Chest. Hill—Park St. subway	5,862	5,084
	Francis St. to Park St. subway	5,627	8,286
	Arborway—Park St. subway	5,806	6,249
	Dudley station—Park Sq.	No inbound	312
	Beacon St.—Reservoir	11,077	10,382
Boylston St. subway	Lake St.—Commonwealth	11,280	9,872
	Watertown—Brighton	11,077	10,233
	Kenmore—Lechmere	10,784	10,173
Stuart St. bus		218	310
Columbus Ave.	Boston & Worcester Street Railway	432	492
	City Point—North Station	4,141	4,438
Tremont St. subway entrance	Dudley station—North Station	1,798	1,529
	Egleston Sq.—Tremont St.	7,786	7,190
	Lenox St.—Columbus	2,203	2,193
	City Point—Essex St.	568	636
	Uphams Cor.—Essex St.	974	1,031
Washington and Kneeland Sts.	Eustis and Washington Sts.—Essex St.	927	906
Washington St. tunnel		58,894	55,575
Atlantic Ave. R. T. trains		5,777	6,161
	City Point—South Station (Broadway)	1,049	1,983
	City Point—Rowes Wharf	2,850	3,130
Dorch. Ave. and Summer St. Extension	City Point—Army Base—South Station	2,135	2,469
	Berkeley and Boylston Sts. Route	598	606
Dorchester Ave. — Broadway Extension		31,352	29,618
Dorchester tunnel	Bunker Hill St.	3,467	3,387
	Main Street	1,652	1,683
Charlestown Bridge	R. T. trains	41,128	43,872
Viaduct, train service		15,103	15,383
East Boston tunnel		20,769	26,723
	Totals	325,765	324,753
	Grand Total		650,518

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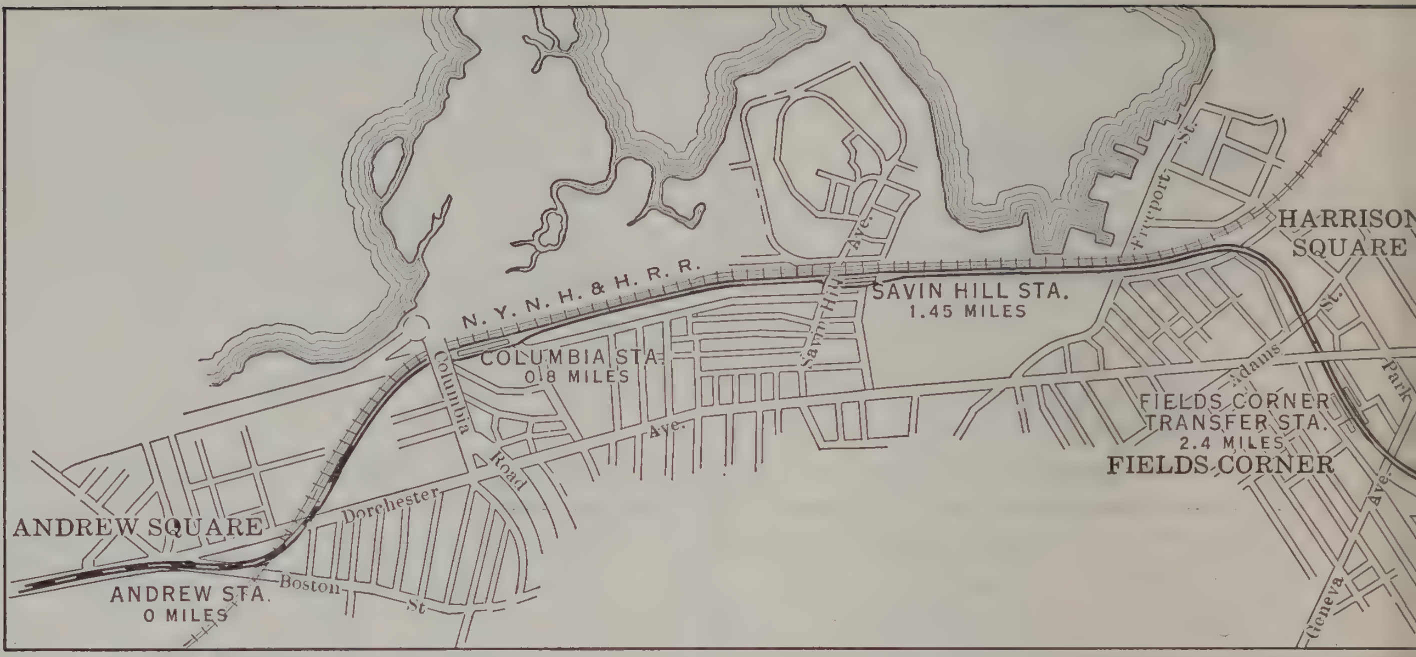
*Figures taken from traffic counts of April and May, 1926.



ROUTE OF THE DORC

WHAT IS WHAT ON THE DORCHESTER TUNNEL EXTENSION

Steady progress is being made from week to week on the extension of rapid transit by third-rail line from Andrew Square, South Boston, to Columbia, Savin Hill, Fields Corner, Shawmut and Ashmont Stations and by high-speed trolley to Cedar Grove, Milton, Central Avenue and Mattapan.

This extension is prominent among the outstanding developments in rapid transit in this country at present. It will result in great benefit to the people of Dorchester and Milton. It will also help to relieve congestion at South Station by eliminating some of the commuter travel. It will give the railway the opportunity to install such supplementary feeder service in Dorchester as the communities may require.

With the aid of the accompanying map one can trace the route, as follows:

1. The Dorchester tunnel has been extended from Andrew Square under Boston Street and the tracks of the Old Colony division of the New Haven Railroad. The track comes to the surface on the right-of-way of the latter east of Dorchester Avenue. A picture showing the construction at the Dorchester Avenue bridge was reproduced in the issue of "Co-operation" for December, 1925.

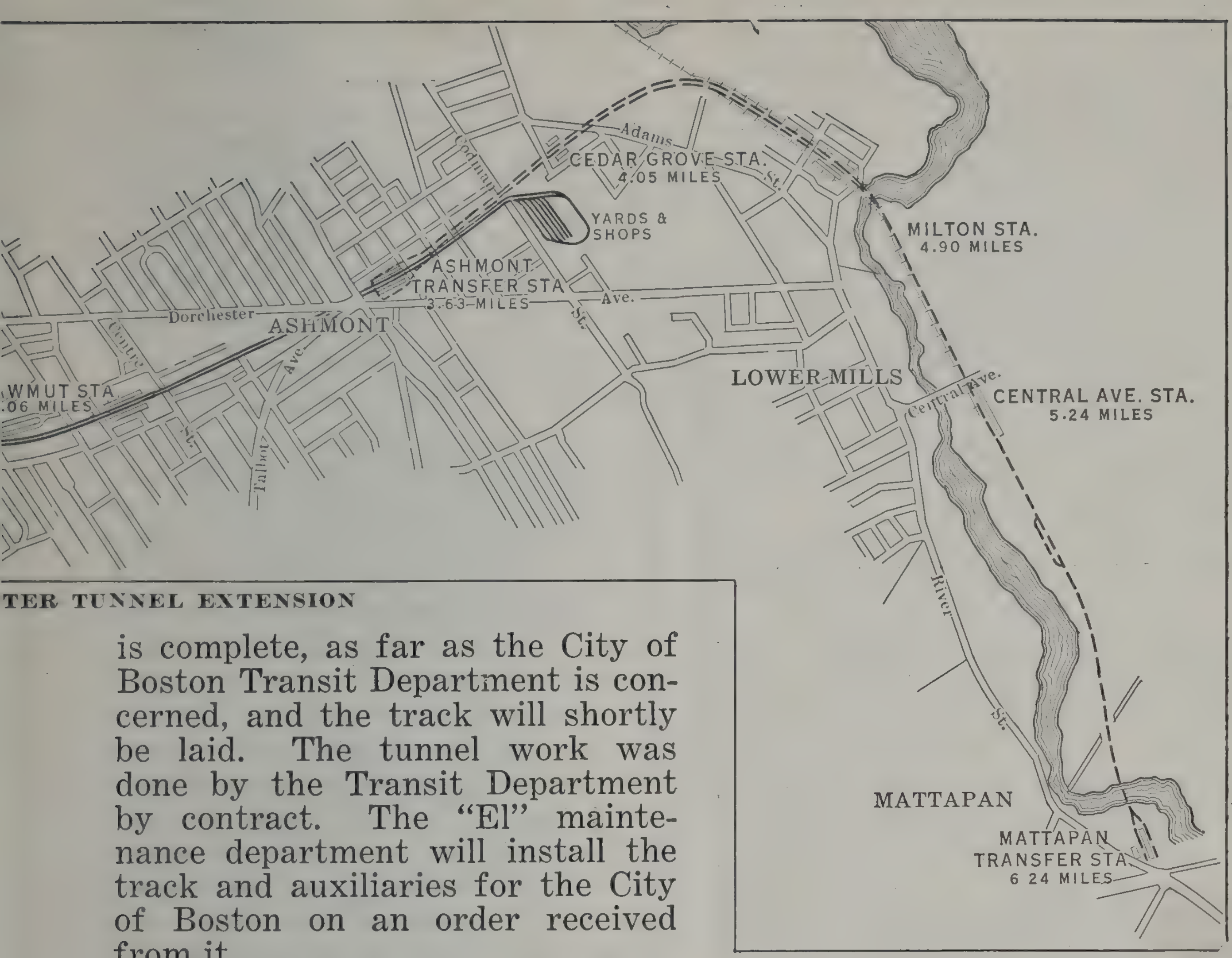
2. From this point to Harrison Square the "El" tracks will be constructed on the west side of the right-of-way of the New Haven. This necessitates the relocation by the steam railroad of its own tracks for a distance of about 4500 feet between Columbia Avenue and Savin Hill on the easterly side of the railroad property.

3. At Harrison Square the "El" will leave the Old Colony right-of-way, using what is at present the Shawmut Branch of the latter. This branch will soon be taken over by the "El" and electrified for rapid transit to Peabody Square, where there will be a yard and shops.

4. From Ashmont to Mattapan the track of the steam railroad will be rebuilt and electrified for high-speed trolley service, with provision for convenient passenger interchange at Ashmont.

The completion of this project will add over 6½ rapid-transit route miles to the system, including more than 2½ miles of high-speed trolley route on private right-of-way.

Now as to the present status of the extension, the heavy construction on the first section from Andrew Square to Dorchester Avenue



TER TUNNEL EXTENSION

is complete, as far as the City of Boston Transit Department is concerned, and the track will shortly be laid. The tunnel work was done by the Transit Department by contract. The "El" maintenance department will install the track and auxiliaries for the City of Boston on an order received from it.

The New Haven Railroad is actively at work on its track relocation, which is being done in several "phases" so as not to interfere with traffic, and the eastwardly new track is being laid first. When this is complete traffic will be transferred from the present easterly track, which will be moved, and so on. Eventually the present westerly track will be abandoned and salvaged.

On the new rapid-transit right-of-way the Transit Department will prepare the roadbed, build all structures, erect fences, etc., and will delegate the railway to build tracks, and install conduits and cables for power, etc.

Details of the Fields Corner and Ashmont Stations, to be constructed by the Transit Department, are being worked out. The design for the former is complete.

Provision has been made for the purchase by the railway of a 3,000-kilowatt rotary converter with automatic control equipment, for use with similar equipment to be provided by the city, all to be located in a new substation at Harrison Square. A second substation will be located near Ashmont Station.

On the new right-of-way the conduits and cables for power supply will be furnished by the city, and off the right-of-way by the railway.

The Transit Department is about to advertise for bids on supplies for Section 2 of the extension, extending from Harrison Square to Park Street, including Fields Corner. Materials such as those used for track, power supply, signals, etc., will comply with the standard specifications of the railway. Sixty cars of the Cambridge subway type have been ordered for delivery in February, 1927.

The New Haven Railroad has petitioned the Department of Public Utilities for a hearing preliminary to abandoning passenger service on the Shawmut Branch at an early date. It is understood that the railroad will provide for commuter travel from the southern end of this branch over another route to the east of the present one.

The natural question to ask at this point is, When will the new service be inaugurated? In accordance with the present rate of progress it should be possible to begin service before the end of 1927, say October or November, to Fields Corner, which will temporarily be the terminal.

TRAFFIC EASILY HANDLED

(Concluded from page 91)

ordinary business riding, and ample transportation facilities are available without running extra service.

The circus tents this year accommodated about 15,000 people at a time and there were two performances daily for a week, June 7 to 12. During this period about 73,240 additional passengers paid fares and were admitted to Sullivan Square Station. It is safe to say that an equal number rode to the circus, so that in the aggregate there were about 150,000 extra fares received as a result of the visit of the circus to Boston.

All these passengers were comfortably handled without the running of any extra train service, the only expense to the railway being a comparatively small cost for collecting the fares at Sullivan Square and some extra surface-car service by Division 4 to and from the outlying districts beyond that point.

I take no thought of my neighbor's birth,
Or the way he makes his prayer,
I grant him a white man's place on earth
If his game is only square.
While he plays it straight
I'll call him mate
When he cheats, I'll drop him flat;
All rank but this is a worn-out lie—
For each clean man is as good as I,
And a king is only that.

—*Exchange.*

FINES AND JAIL SENTENCES FOR MISUSE OF TRANSFERS

It has been pointed out heretofore* how conductors and operators can safeguard the revenue of the railway by the proper issuance of transfers and by the careful inspection of transfers when they are tendered for fares.

There are, however, cases where persons not entitled to use transfers nevertheless tender to the conductors transfers which are good on their face and which the conductor has no means of knowing are being improperly used by the persons tendering them. Such cases arise when transfers have been picked up by persons in the street where they have been thrown by passengers who have taken them and for some reason have not wished to use them or who, without any intention to use them, have taken transfers and then given them to persons on the street. Some passengers have been found taking two transfers at transfer points when of course they are entitled to take only one.

With regard to the misuse of transfers which are good on their face, the company is exerting itself to put a stop to the abuse. Since Jan. 1, seventy-one persons have been prosecuted for misuse of transfers. Those who have used transfers which have been picked up on the street or have been given to them by passengers, have been prosecuted under the law making it a criminal offence to misuse a transfer. Persons who have taken two transfers at transfer points have been prosecuted for the larceny of the transfer taken in excess of the single one to which they were entitled. A large number of those prosecuted have paid fines and some have been sent to jail.

Vigilance on the part of conductors and operators in the issuance of transfers and in the careful inspection of transfers when offered for fare, combined with the action of the management in causing prosecution of persons using transfers, the misuse of which cannot be detected by conductors or operators, is bound to increase the revenue of the railway.

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*See issue of "Co-operation" for June, 1926, page 62.

TROLLEY WHEELS

Until some one invents a wireless means of transmitting electricity to the electrical apparatus of a street car, the trolley wheel, or a similar device, will continue to perform a very important function in its movement.

Much depends upon the proper working of the little device for picking up the current from the overhead wire, as serious delays can be caused by its defective working. A trolley wheel jumping from the wire can generally be replaced with but a few seconds delay, but if it catches in the overhead wire, so as to pull the wire from its fastenings, or causes the pole itself to be detached from the car, or creates a short circuit which results in a fire being started, those few seconds may result in not only minutes, but perhaps hours of delay, and not only for that one car but for many cars.

Careful inspection of trolley wheels is made on this property, and all defective or badly worn wheels are replaced with new ones immediately.

The average life of a trolley wheel is about four months, depending upon how many miles the car has traveled, the average being from 6,000 to 7,000 miles. During this time the ordinary trolley wheel will have revolved from 40,000,000 to 50,000,000 times.

About 9,000 wheels are used annually on our surface lines, these being all cast and machined in our own shop, each costing about $1 and weighing about 2 lb.

A COUPLE OF "BOUQUETS"

The following men, both of whom are from Division 4, have been commended for alertness, under the circumstances as explained:

Francis M. Drew, Operator No. 4082, while off duty on Aug. 5, was standing at the corner of Fulton and Salem Streets, Medford. He was notified by a passing automobile driver that the trolley wire was broken on Salem Street near Washington Square. He immediately went to the scene and, being in uniform, took charge of keeping pedestrians away from the broken wire and assisted in directing traffic until inspectors arrived.

Operator Robt. S. Covenay, No. 4278, the following evening also was off duty and in the vicinity of Union Square. He noticed a broken trolley wire on Webster Avenue. He immediately notified Night Clerk Donahue at Division 4 office, and remained on duty keeping pedestrians away from the wire until men from the wire department arrived.

Incidents of special thoughtfulness like these indicate the spirit of co-operation which exists throughout a large part of the organization.

THE MAN WHO DOES HIS BEST

By James Hungerford

No matter how little he's getting;
No matter how little he's got.
If he wears a grin, and is trying to win—
He is doing a mighty lot!
No matter how humble his job is,
If he is striving to reach the crest,
The world has a prize for the fellow who tries—
The man who is doing his best!

Today he may be at the bottom
Of the ladder to wealth and fame,
On the lowest rung, where he's bravely clung,
In spite of the knocks—dead game!
But slowly he's gaining a foothold,
His eyes on the uppermost round;
It's a hard old climb, but he knows in time
He will land—and be looking down!

The fellow who never surrenders,
And is taking things as they come,
Who never says "quit," and exhibits grit,
When the whole world's looking glum;
The fellow who stays to the finish
That nothing can hinder or stop,
And who works like sin, is the chap who'll win—
And some day he'll land on top!

—*Exchange.*

COMPARATIVE DIVISION OF RECEIPTS AND EXPENDITURES FOR THE YEARS ENDING JUNE 30

	1926	1925	1924	1923	1922	1921	1920
Total Receipts	$35,087,845.89	$34,198,250.91	$34,262,009.46	$33,612,335.20	$32,698,965.01	$34,200,286.06	$32,671,515.53
Operating Expenses							
Wages	17,534,387.50	17,108,826.50	17,218,039.47	15,024,348.04	14,920,406.05	16,753,667.74	16,381,206.58
Material, supplies and other items	3,349,367.41	3,164,261.04	3,165,430.27	3,149,687.89	3,056,520.80	2,899,983.94	3,321,671.70
Injuries and Damages	760,440.65	649,131.12	789,098.53	700,740.79	476,844.02	627,629.02	627,626.48
Depreciation	2,533,773.15	2,496,000.00	2,250,000.00	2,004,000.00	2,004,000.00	2,004,000.00	2,004,000.0.00
Fuel	1,128,464.98	1,188,199.60	1,587,089.27	2,027,712.50	1,656,012.89	2,399,277.71	1,996,717.21
Total Operating Expenses	$25,306,433.69	$24,606,418.26	$25,009,657.54	$22,906,489.22	$22,113,783.76	$24,084,558.41	$24,331,221.97
Taxes	1,819,905.37	1,623,666.39	1,603,269.38	1,722,707.95	1,610,096.47	1,306,736.39	1,075,496.70
Rent of Leased Rds. (incl. div.)	3,165,449.57	3,173,836.74	3,182,020.41	3,186,048.02	4,155,997.46	4,196,533.56	4,011,535.96
Subway and Tunnel Rents	2,214,613.95	2,189,966.39	2,060,337.09	2,025,263.33	1,974,141.07	1,947,963.20	1,591,323.98
Int. on B. E. Bonds and Notes	2,532,590.89	2,576,651.75	2,479,762.27	2,277,051.15	1,483,786.91	1,483,625.54	1,593,257.58
Miscellaneous Items	58,907.03	58,995.48	71,165.21	65,086.23	58,475.99	54,479.21	69,284.73
Total Cost of Service	$35,097,900.50	$34,229,535.01	$34,406,211.90	$32,183,545.90	$31,396,281.66	$33,673,896.31	$32,672,120.92
Loss or Gain not including Profit and Loss Items	**$10,054.61**	**$31,284.10**	**$144,202.44**	$1,428,789.30	$1,302,683.35	$526,389.75	**$605.39**
Profit and **Loss** Delayed Items	32,359.07	51,865.43	144,202.44	**314,231.48**	82,528.09	23,863.77	17,685.34
Total **Loss or** Gain including Profit and Loss Items	$22,304.46	$20,581.33	$00.00	$1,114,557.82	$1,385,211.44	$550,253.52	$17,079.95

	1919	1918	1917	1915	1910	Sept. 30, 1905	Sept. 30, 1900
Total Receipts	$25,226,981.50	$19,480,022.08	$19,788,953.25	$17,886,549.64	$15,245,865.48	$12,741,569.30	$10,236,994.49
Operating Expenses							
Wages	13,554,684.15	9,147,757.25	9,033,868.40	7,709,373.86	5,910,757.73	....	....
Material, supplies and other Items	4,096,537.98	2,680,423.77	1,951,176.39	1,922,622.52	2,376,033.78	....	....
Injuries and Damages	805,353.09	817,227.18	819,705.54	722,177.00	776,588.37	....	....
Depreciation	2,004,000.00	352,670.00	330,000.00	62,989.65	200,000.00	....	....
Fuel	1,901,596.75	1,381,957.20	947,412.50	870,820.30	822,497.54	....	....
Total Operating Expenses	$22,362,171.97	$14,380,035.40	$13,082,162.83	$11,287,983.33	$10,085,877.42	$8,617,653.04	**$7,068,110.24
Taxes	941,611.50	905,032.96	984,070.55	1,069,189.27	1,213,089.37	1,047,333.72	825,993.04
Rent of Leased Rds. (incl. div.)	3,947,349.57	2,905,611.60	3,622,482.28	3,638,655.75	3,030,168.15	1,233,199.43	1,157,130.00
Subway and Tunnel Rents	1,491,999.54	991,551.30	995,093.45	825,496.17	559,469.14	228,540.63	211,146.67
Int. on B. E. Bonds and Notes	1,423,142.14	1,238,373.55	1,138,655.88	1,049,785.12	556,000.00	779,757.76	498,569.89
Miscellaneous Items	37,372.67	16,050.44	9,525.11	4,587.89			
Total Cost of Service	$30,203,647.39	$20,436,655.25	$19,831,990.10	$17,875,697.53	$15,444,604.08	$11,906,484.58	$9,760,949.84
Loss or Gain not including Profit and Loss Items	**$5,412,014.35**	....	....	....	....	....	....
†Profit and **Loss** Delayed Items	**3,485.78**	....	....	....	....	....	....
Total **Loss or** Gain including Profit and Loss Items	**$5,415,500.13**	**$956,633.17**	**$43,036.85**	$10,852.11	**$198,738.60**	$835,084.72	$476,044.65

† Not reported separately before 1919.

** Includes $240,000.00 to Depreciation Reserve.

* Includes $435,348.46 back pay applying to May and June, 1919, but paid in October, 1919.

SUPERVISORS—THEIR QUALIFICATIONS AND SELECTION*

They Should Be Appointed on the Basis of Special Fitness as Disclosed by Efficient Performnace of Duty

I appreciate the courtesy which has been extended to me in inviting me to take part in these deliberations.

It is plainly to be observed that the study of "Supervisory Forces" has become recognized as a most vital matter in successful organization. Obviously, even an exceptionally capable management could not long endure if it were required to function with an inefficient supervisory force. Contrariwise, a virile, progressive, capable supervisory force could show no good results if management were weak, vacillating or inefficient.

The element of permanence plays an important part here. It has always seemed to me that we fail to appreciate that great organizations are going concerns. Changes in financial management, unfortunately, too often result in changes in organization which are both unjust and unnecessary, and which interfere with the efficient building up of the supervisory forces.

Without reasonable, stable conditions of management much of the urge and appeal to the higher motives of subordinates is lost. Hence the ideas of the management with regard to qualifications, selection and training of the personnel in any given organization must not be subject to too great a shifting about.

Management, therefore, must put its house in order. It must have a reasonable, definite and reasonably permanent program upon which to go forward, before any very effective results can be secured in supervisory selection and training.

To illustrate by reference to a detail let us consider the pension plans which are increasingly popular, and deservedly so. Where this feature is definitely provided upon a permanent basis, it exerts a marked influence upon the quality of material available for supervisory positions. The effect is quite different when there is not this element of stability.

Qualifications of Supervisors

The topic assigned to me is the very starting point of the whole program of improving the quality of the supervisory forces. The two divisions of the topic, qualification and selection, must be treated separately, although they are of course intimately related. Take first the matter of qualifications; what characteristics are needed in an employee who is under consideration for a supervisory position?

There are two points of view here. The supervisor occupies an unique position, in contact with the workers on one hand and with the management on the other. He needs knowledge of the problems of both and sympathy with their aims and plans. This imposes a double set of requirements upon the supervisor —one from the standpoint of the working force, the other from that of the management.

To be acceptable to the working force the supervisor needs certain qualities which are difficult to tabulate but which may be summed up in the term **leadership.** It is not necessary to dissect this term for our present purpose, except to note that men like to follow the leader.

(1) for whom they have affection,
(2) whom they can trust, and
(3) who they feel (and feeling plays a large part here) can help them make the most of themselves.

It must be remembered that the individual worker nowadays works in a narrow groove and cannot see his job in perspective and in relation to the big operation of which it forms a part. One aim of management must be to give him as much general information as he will and can absorb, but the chief reliance for the perspective view which comes from trained leadership must increasingly be the supervisor.

It follows, of course, that the detailed qualities will not necessarily be similar in all leaders, but these qualities must comprehend the elements mentioned and they must produce the desired results.

From the standpoint of the management, the supervisor needs in addition to leadership the **ability to manage.** His duty is to accomplish the purposes of his employer with economy, using that term in its broadest sense. Possibly this qualification is a little easier to analyze than the foregoing. Let us see what are some of its characteristics:

1. There is a willingness to study the organization as a whole, be it manufactory, public utility, or what not.
2. There is a capacity for analysis and a sizing-up of the vital problems involved in the functioning of the organization.
3. There is a desire to co-operate with other executives and to look upon

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*Abstract of paper read by Edward Dana at Production Executives' Conference, American Management Association, Silver Bay, N. Y., July 1, 1926.

the work of each as part of the whole.

4. There is a conviction that the supervisor's job is largely one of carrying and discharging responsibility.
5. There is the ability to get things done, to execute plans, to turn out a finished product acceptable to the customer, whoever he may be.

I realize that all of the above are merely suggestions as to the managerial qualities of the supervisor, but they are vital. If a prospective supervisor has them in large measure he will be a success in his larger field if given an opportunity.

I realize also that the outline I have given is general. It is desirable for practical purposes to go into more detail. It most certainly is the function of management to know exactly what qualifications are required for its particular needs. But different organizations may well require different qualifications, and different branches of a given industry may call for different qualifications.

The determination of these detailed qualifications is not a hit-or-miss task, but one of the fundamental duties of management, too often neglected, with resulting confusion and loss later on. And there is some risk of going too far in our classification. We all know the difference between good and bad as relative terms. It is comparatively easy to elaborate upon these terms until we reach such a detail of attributes that rarely would a human being be found who could acceptably meet such requirements.

I do not for a moment wish to suggest that such an enumeration of qualities is not essential, but to the extent that the relative importance of each of the attributes can be evaluated and the most important fundamental qualifications emphasized it is wise that the qualities be enumerated.

I have been much interested in a comprehensive list of qualities desired in a supervisor which were compiled with the aid of the men of this rank in the works of the Westinghouse Electric and Manufacturing Company. The items are segregated under three general heads, as follows:

Personal Qualities: Fairness, tact, honesty, optimism, good health, self-control, enthusiasm, sympathy, dignity, firmness, patience, dependability, open-mindedness, punctuality, frankness, poise, unselfishness, sense of humor, courtesy, broad-mindedness, loyalty.

Managerial Qualities: Initiative, judgment, system, courage, resourcefulness, foresight, power of analysis, self-confidence, alertness, decision, progressiveness, perseverance, imagination, concentration, sense of proportion and values.

Special or Technical Knowledge: Material, equipment, economies of production, time study and rate setting, cost and accounting, inspection methods, first aid.

In a letter which I received recently from the Marion Steam Shovel Company the following characteristics are listed as desirable for consideration in the selection of men for executive positions: Appearance and manner, technical ability, initiative, leadership, planning ability, co-operativeness, ability in developing men.

This list is shorter than the foregoing, due to its more general character but it, like the larger list, epitomizes the general principles which I outlined earlier.

Selection of Supervisors

Any executive who is responsible for placing men in supervisory positions has in mind certain qualifications needed in men eligible for those positions. These may or may not be definitely formulated, but they are in his mind nevertheless or he could make no intelligent selection.

When we have succeeded in setting up a definite list of qualifications for supervisors and proceed to the task of selection, we again must proceed upon the assumption of an efficient management with an eye single to securing the very best results.

What we need to strive for in the selection of supervisors is the elimination of the casual, but ofttimes powerful, factors. Some ambitious employees are such good salesmen (of themselves) that they over-sell themselves to their employers. Personal qualities which tend to develop friendship may blind the appointing powers to fatal defects in mental and physical equipment.

It goes without saying that friendship, family connections and, in the utilities, politics, must be completely eliminated if real results are to be secured. Such perfection in management does not exist at the present time, but is certainly not impossible of attainment. As the increased cost of labor and greater use of machinery become more potent factors in successful organizations the necessity for unprejudiced selection becomes more essential.

So much for what should not be done in selecting supervisors; now for the positive side. It is desirable to get the opinions of several unbiased persons regarding an individual who is under consideration for appointment.

The following list of qualities is suggestive in the selection of supervisors. It is desirable that the opinions of several persons be secured in rating employees on these points: (1) Ability to get co-operation; (2 alertness; (3) courteousness; (4) decisiveness; (5) enthusiasm; (6) foresight; (7) initiative; (8) judgment; (9) knowledge of his job; (10) leadership; (11) loyalty; (12) open-mindedness; (13) poise, dignity, self-confidence; (14) punctuality; (15) resourcefulness; (16) self-control; (17) sense of humor; (18) sincerity; (19) tact; (20) thoroughness.

Some such aid as this cannot but prove helpful and stimulating. Estimates resulting from its use, when properly weighed, are valuable in supplementing other sources of information.

In the preparation of this paper I have requested and received suggestions from a large number of employers as to ways in which employees are picked for supervisory positions. Their methods all reduce to this "common denominator":

1. Get the employees interested in any activities which tend to disclose the qualities previously mentioned.
2. Study them in as many different environments as possible.
3. Get the viewpoints of several people as to their qualifications.
4. Rate them systematically to determine which ones have the highest average of all desired qualities.

In addition to the above I believe that examinations and other tests have their place in connection with the selection of supervisors. In fact, I look forward to a time when objective tests will be more generally used in connection with promotions.

Why should not candidates for promotion to positions of supervisory nature be required to take written or oral examinations, or series of examinations, on questions skilfully framed to bring out, within the limitations of this method of testing, the qualities sought?

Such examinations might be supplemented with simple psychological tests, to the degree that experience shows the results of such tests to be related to subsequent performance.

In closing I wish to refer to the value of a general educational program as related to the selection of supervisors. One outstanding result of such a program for supervisors and others is that the participants disclose their aptitudes, and their superiors are given an opportunity to study them with a view to giving the supervisors commensurately increased responsibility. This phase of selection and training will undoubtedly be brought out in the discussion of foreman training. I, therefore, dismiss it now with the suggestion that in the planning of any program of training there be due regard for it as an important by-product.

ON THE RETIRED LIST

The following employees were rewarded for faithful service by being placed on the pension list during June:

C. H. Blanchard, motorman, Div. 1.
Mrs. C. A. Buckley, collector.
J. F. Canty, carpenter.
Thomas Doyle, foreman carpenter.
M. O. French, motorman, Div. 3.
M. Gibbs, construction foreman.
John Green, paver.
Michael Leary, paver.
E. F. Livingston, chief investigator of claims.
C. L. Martin, painter.
R. B. Milzner, machinist.
R. M. Nilson, conductor, Div. 1.
C. F. Olsen, car cleaner.
James Rafferty, laborer.
J. E. Roan, car cleaner.
J. E. Robinson, special officer R. T. L.
J. C. Smith, gateman R. T. L.
H. E. Trevor, construction foreman.

There were no deaths of pensioners during June. This brings the total number of pensioners to 343.

In less than ten years more people have been killed by accidental falls than the total number (111,012) killed in all the wars since the founding of the United States one hundred and fifty years ago.

PENSIONER'S HANDIWORK

Below is a picture of a model of the "Red Jacket," a schooner built at Rockland, Me., in 1854. The original weighed 2,006 tons. The model is the work of Henry F. Phee, a Boston Elevated pensioner, formerly Motorman 2297. He was appointed June 30, 1896, and retired June 1, 1924. Mr. Phee is now 62 years of age. One of his principal hobbies is ship model making, of which the "Red Jacket" is an excellent example.

Mr. Phee's Model of the "Red Jacket"

CHANGES IN THE RESERVE FUND

Fiscal Year 1925-26

July 1, 1925, $1,000,000

July	**$249,477.93***	Jan.	$223,301.90†
Aug.	**367,593.94***	Feb.	**185,989.63***
Sept.	**176,763.97***	Mar.	161,772.65†
Oct.	117,703.96†	April	77,031.69†
Nov.	45,265.00†	May	57,010.06†
Dec.	289,347.71†	June	**$1,662.18***

Profit and loss credit.....$32,359.07

Fiscal Year 1926-27

July 1, 1926, $1,000,000

July	**$393,028.41***

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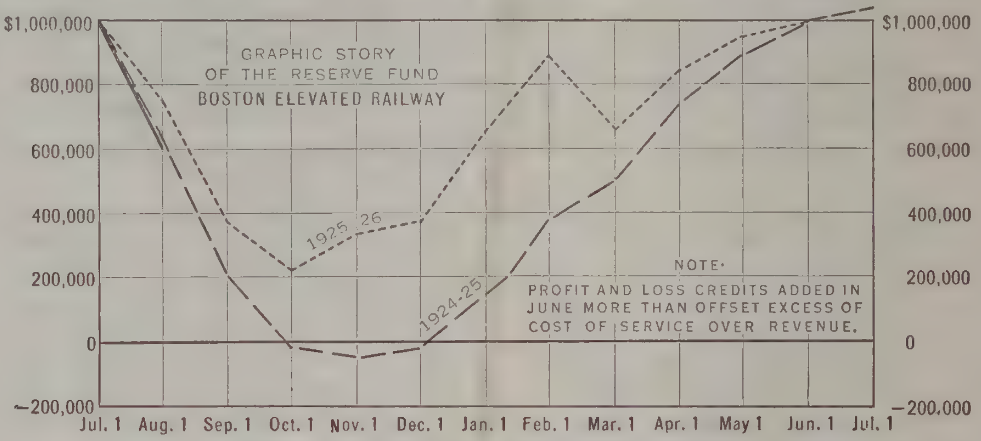
†Excess of revenue over cost of service. *Excess of cost of service over revenue



Heavy line shows July, 1926, record

JULY OPERATION

GENERAL FINANCIAL DATA	1926	1925
Cost of service exceeded revenue	$393,028.41	$249,477.93
Operating revenue per car-hour (A. E. R. A. std.)	$5.23	$5.49
Operating revenue per car-mile operated	54.24c	56.77c
Average fare per revenue passenger	9.284c	9.279c
Ratio operating expense to operating revenue	83.95%	79.23%
PASSENGERS CARRIED		
Revenue passengers	27,160,300	27,119,429
Per cent 5c and 6c passengers	17.39%	17.25%
Revenue passengers per car-mile operated	5.647	5.995
OPERATING FACTS		
Trips operated	630,054	594,131
Car-miles operated:		
Rapid-transit lines	1,186,783	1,193,204
Surface, two-man	1,965,154	1,983,587
Surface, one-man	1,238,162	1,112,084
Express, newspaper and sprinkler cars	2,345	9,821
Motor bus	417,165	224,646
Total miles operated	4,809,609	4,523,342
ACCIDENT DATA		
Accidents per 10,000 car-miles	2.02	2.03
Accidents per 10,000 bus-miles	3.55	4.85
Revenue passengers carried per accident	26,600	27,600
Average number of witnesses per accident	3.1	3.6
COMPLAINTS AND DEFECTS		
Complaints in regard to car service	6	16
Employees complained of by car riders	78	68
Car defects reported per 10,000 car-miles	3.7	5.3
INFORMATION ABOUT POWER		
D.c. kw.-hr. output gross per month	16,726,380	16,524,055
Maximum kw. load	54,920	55,280
Tons of coal consumed	15,569	14,302
Lbs. of coal burned per d.c. kw.-hr. at cars	2.091	1.944
Oper. and maint. cost, including depreciation:		
Per d.c. kw.-hr. for car service	1.18c	1.18c
Per revenue car-mile	4.11c	4.20c
Kw.-hr. per revenue car-mile	3.49	3.54

Aug. 25, 1926.

EDWARD DANA, *General Manager.*

ALLIED PRINTING TRADES UNION LABEL COUNCIL BOSTON

1018

BOSTON ELEVATED RAILWAY
CO-OPERATION

Volume 5 SEPTEMBER, 1926 Number 9

INCREASE CAR RIDING

Traffic congestion can be reduced if riding on the Elevated lines can be increased.

Mass transportation provided by the Elevated system is more economical of space in the highways and is provided at a lower cost than any other way of travel.

At Governor Square and Kenmore Station in the maximum 15-minute period from 5:30 to 5:45 p. m. there were 30 Elevated units comprising 78 cars, transporting 4178 passengers. In the same period there were 1204 automobiles carrying 2057 passengers.

The mass transportation agency—the Elevated—was carrying 67 per cent of the passengers, yet the remaining 33 per cent were being transported in 40 times as many units, all of which adds congestion beyond the physical capacity of the highways to digest, resulting in loss of time and confusion to all hands.

Increased riding on the Elevated benefits everybody and produces revenue with which to improve the service provided. The Elevated transports more than a million people daily, and is the foundation upon which business activity rests in Metropolitan Boston.

Secure all the fares, guard transfer losses, cultivate more riders. It's our business.

"A RIDE A DAY KEEPS POOR SERVICE AWAY"

To All 'L' Employees

THE fight against the winter snows taxes all transportation agencies and calls for a determination to render service regardless of difficulties.

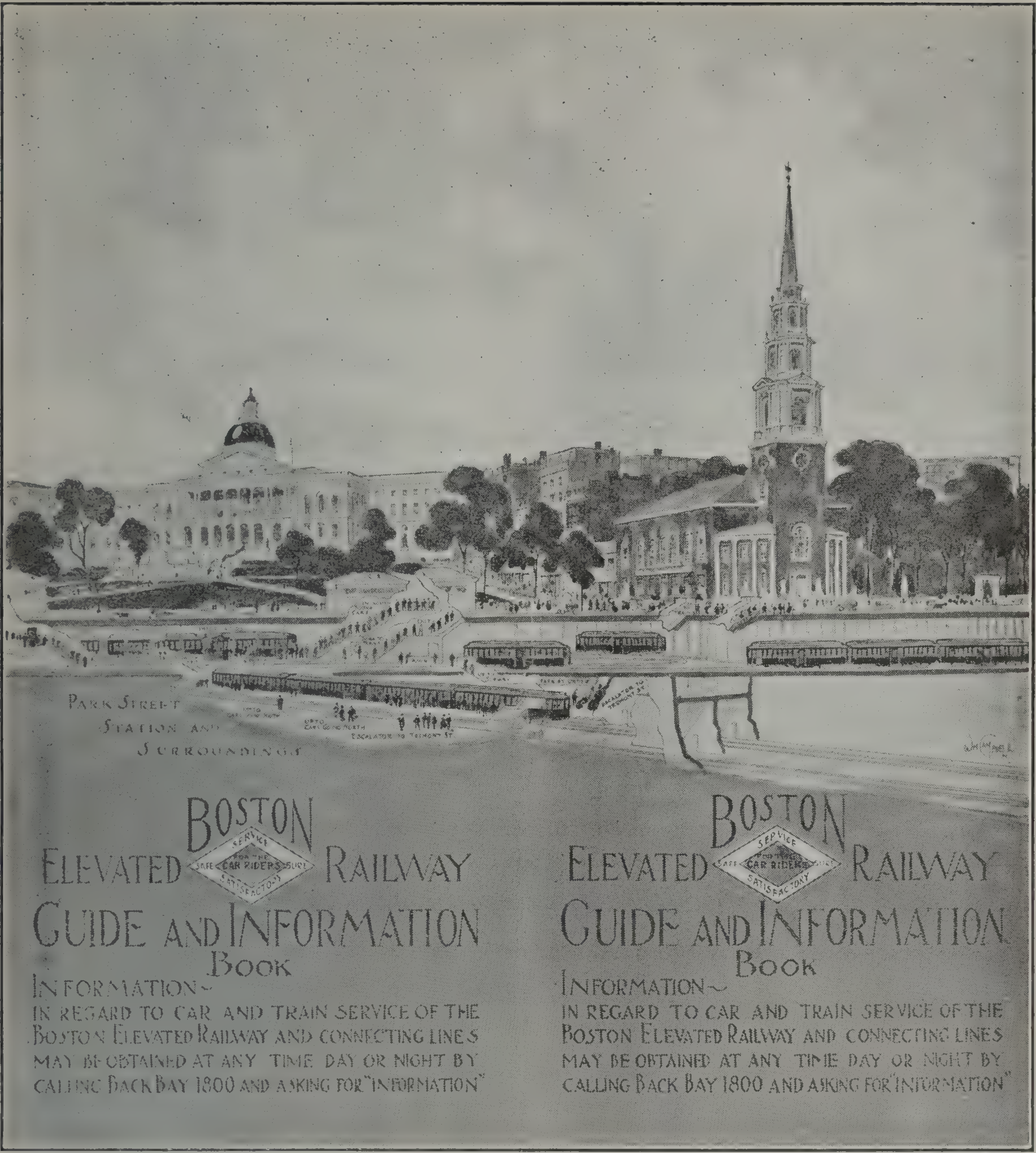
Our snow-fighting equipment and our organization of the work have never been in better condition.

Real success in coping with snow can come only when each individual unit of the entire organization takes upon its shoulders the responsibility of the occasion as it arrives.

Do not wait for the other fellow to telephone, or to bestir himself to unravel tie-ups. Get on the firing line yourself and be a real factor in the struggle. Lost time in taking proper action never can be made up.

"Heads up" railroading by everybody spells success.

Edward Dana



BOSTON
ELEVATED RAILWAY
SERVICE FOR THE CAR RIDERS SAFE SURE SATISFACTORY
GUIDE AND INFORMATION
BOOK

INFORMATION~
IN REGARD TO CAR AND TRAIN SERVICE OF THE BOSTON ELEVATED RAILWAY AND CONNECTING LINES MAY BE OBTAINED AT ANY TIME DAY OR NIGHT BY CALLING BACK BAY 1800 AND ASKING FOR "INFORMATION"

BOSTON
ELEVATED RAILWAY
SERVICE FOR THE CAR RIDERS SAFE SURE SATISFACTORY
GUIDE AND INFORMATION
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INFORMATION~
IN REGARD TO CAR AND TRAIN SERVICE OF THE BOSTON ELEVATED RAILWAY AND CONNECTING LINES MAY BE OBTAINED AT ANY TIME DAY OR NIGHT BY CALLING BACK BAY 1800 AND ASKING FOR "INFORMATION"

This Cover Will Appear in Colors

NEW EDITION OF GUIDE AND INFORMATION BOOK

There is just coming from the press a new edition of the familiar and useful "Guide and Information Book" issued originally in 1924. The general plan of the new edition is the same as that of the old one, but the cover and maps are in colors. The use of different colors for the several kinds of transportation lines will make it easier for employees to explain to patrons how to get from place to place. The reproduction of the cover shown above gives only a faint idea of the beauty of the actual colored picture.

OUR BUS ROUTES UP TO DATE

Since the publication of the large route map in the issue of "Co-operation" for November, 1925, there have been several minor changes in routes then in operation and eight new routes have been added. The map has therefore been revised and is reprinted on pages 112 and 113 of this issue.

WHAT MAKES A GOOD ACCIDENT REPORT?

An examination was held a short time ago for the purpose of selecting train, car and bus operators to represent the railway at the National Safety Congress this year.* One question was as follows: "Why should an accident report be made out in detail?" The answers are illuminating and instructive, and many phases of the question are covered in the following selected answers:

"To give the claim department a chance to present its case and defend the railway in court."

"To protect the railway, myself and all others concerned."

"To give the claim department and officials of the road actual knowledge as to how it happened."

"So that the claim department may have all the available information regarding it."

"In order to place the responsibility for the accident; also to protect the railway in case of lawsuit."

"To safeguard the railway, and also the employee, all facts pertaining to an accident, however slight, should be reported."

"To protect the railway from unjust and false claims and help the legal department to defend the railway's interests against all claims for damages."

"To protect the claim department and the railway, and also to help place trouble on right party and save expense to the road and perhaps trouble for the employee concerned."

"Because often it is the little things that count. What may seem not worth while at the time of the accident may loom large afterwards if the case goes to court, so every thing connected with it should be reported."

"To give the claim department a good investigation of the accident, also to protect the railway and myself, and in case of its going to court to have a good clean-cut report to show the jury."

"So that the claim department can act intelligently on it; also because a report that is accurate and clear goes a long way toward impressing a jury that the man who made it out is speaking the truth when testifying."

"The details fully carried out in an accident report save time, money and give justice to all, if they are given correctly. The railway must have the truth in order to know how to handle the case."

"Because giving all details will enable the claim department to get a first-hand picture of the accident. It will protect the railway and help greatly in preparing the case in event of a suit."

"To give the claim department a fair chance to investigate the accident. Should the case go to court after any length of time, when you read over the report it will bring to your mind every incident of the accident and you will be able to tell the whole story to the jury."

"To give the claim department a good chance to investigate the accident, to help the management. It will also help the employee should the case come up in court, by the clear, truthful way you made out the report."

"Every possible detail should be put into every report of an accident in order that the railway may have first-hand information of the accident to protect itself from possible claim without having to plead ignorance of certain facts to a possible claimant."

"Because the interests of the road must be protected against claims that are always likely to arise it is necessary that the claim department should know about the accident at the time it occurs, and all conditions surrounding it, with witnesses in every case."

"Because a detailed report is required by law in some accidents and a detailed report to your superintendent is necessary to establish your own innocence or guilt in the matter, full details are required by the claim department, to settle the case if you are guilty, and if not to protect you and the company from any fraudulent loss in the matter and to fight the case in court to a successful conclusion.

WHEELS AND SAFETY

By D. H. Willett, Department of Accounts

Wheels that revolve in the "El" institution
In the course of the year make some revolution,
Day and night they go round to achieve distribution
Of power unseen, which is the solution
Of safety in running our cars.

If power transmission's to you a delusion,
See our great power plants, then draw your conclusion.
There machines produce kilowatts free from confusion,
Amid safety devices installed in profusion,
For safety in running our cars.

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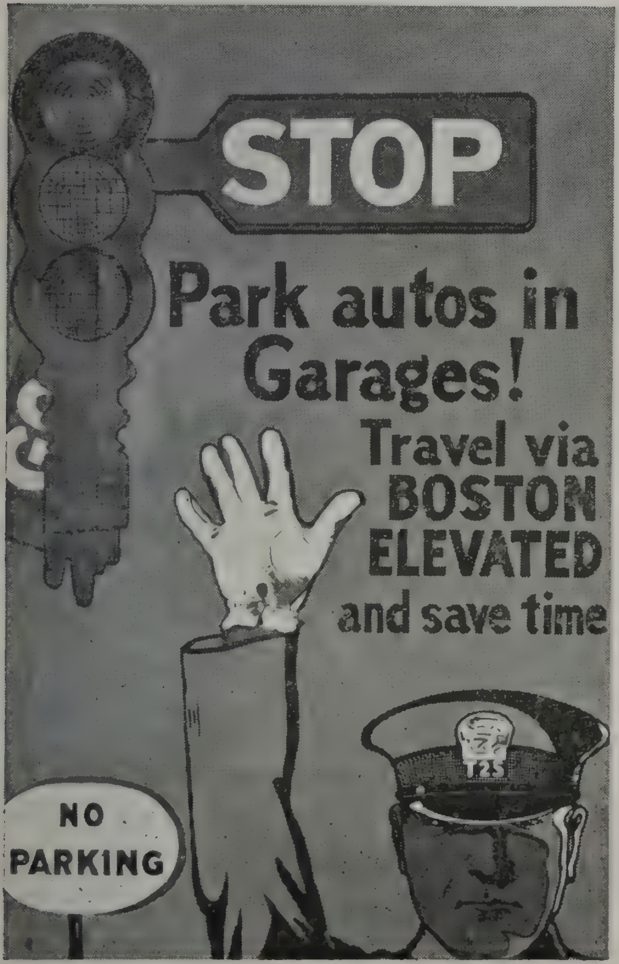
*See also page 94 of the issue of "Co-operation" for August, 1926.

EDUCATIONAL PLANS FOR THE COMING SEASON

Beginning Nov. 1 and ending March 31 a number of classes will be conducted, the topics and methods being based on the experience of the past four years. Detailed announcements with registration forms are now going out and the forms should be filled in as promptly as possible and returned to the general manager's office. Additional copies of the form can be secured from the general manager's office or members of the committee as follows: J. W. Allen (power); J. R. Cashman (purchasing); C. B. Gleason (legal); John F. Kelly (auditing); David F. Lee (claims); E. L. Lockman (maintenance); J. M. Patten (shops); Irving Pratt (treasury); F. L. Sennott (transportation).

"USE THE ELEVATED" POSTERS

Below is reproduced the fourth poster in the series which is helping to impress the public with the value of the service of the Elevated System. The public is rapidly becoming aware of the fact behind this latest poster, namely that it is not economical of time and energy, not to mention money, to bring cars unnecessarily into the congested districts. The recent drive on illegal parking has given this matter fresh emphasis.


STOP
Park autos in Garages!
Travel via BOSTON ELEVATED and save time
NO PARKING

LATEST POSTER IN 1926 SERIES

This poster is the fourth in a series of eight, all new designs, which the Railway is bringing out at about the rate of one a month. The topics of its predecessors were Revere Beach, Chartered Buses and Norumbega Park.

MUSICAL CLUB PLANS

The Boston Elevated Musical Club has plans for its next play under way. The club calls attention to the opportunity for any employee to take part in the show. Many of our employees are talented in this line. They can demonstrate their ability in the next production after proper coaching by our director. The committee wishes to develop this talent and provide clean, wholesome entertainment for fellow-workers. The next play will be of the same excellent quality as the past successes, "The Best Ever" and "The Gypsy Girl." All those desiring parts are urged to report to the director.

The Boston Elevated Bowling League will start bowling at 6.30 Tuesday, Sept. 28, at North Station Alleys. There are fourteen teams in the league.

The Corporation League is making plans to start its season on Oct. 18 at the Recreation Alleys, with either twelve or fourteen teams. The members are now making final arrangements for the opening of the season. E. S. Lent, captain of the Boston Elevated team, is also president of the league.

The Maintenance Department Bowling League is in the field again this year. Its season started on Sept. 20 at the Recreation Alleys. It will meet regularly Monday evenings.

Final arrangements have not as yet been made to get the season started for the Women's Bowling League. It will, however, be heard from soon.

CAPITALIZATION†

By L. R. Nash

As was explained earlier,* the capitalization of public utilities, excluding railroads, was in 1923 about $17,000,000 000. It was being increased about $1,500,000,000 annually, or say, $5,000,000 every working day. Where does this money come from?

Unlike many manufacturing and mercantile enterprises, public utilities cannot finance extensions out of profits. Their capital requirements are very large, and their return is limited by the public service commissions. They have to go to the public for their new money. This is more readily obtainable than formerly. Now, public utilities that are doing an established and reasonably profitable business find a steady demand for their bonds; a large proportion find a ready market for their preferred stock, and a large and increasing number easily sell their common shares under normal conditions.

Public Utility Bonds Are Rated High

Financial authorities class many of the public utility bonds as among the best that conservative investors can buy, because of their high return consistent with safety. Savings banks, life insurance companies, trustees of estates and others are buying these bonds in large quantities.

It is reliably reported that in 1921 fewer than one per cent of the companies doing an electric light and power business, for example, perhaps in combination with other things, were under receivership, with obligations amounting to only 0.1 per cent of the total receivership obligations during that year of business depression.

During the past few years, also, there has been a remarkable development in customer ownership. Thus the local utility becomes "our utility" in the language of the people on the street. A round million of customers and employees in the United States own about a billion dollars worth of these securities, largely stock. At one time it was a successful drive when $2 per capita was sold in stock; recently a Stone & Webster subsidiary sold $6 per capita.

The Two Types of Utility Securities

There are two general classes of public utility securities, bonds and stock. Bonds represent the indebtedness of the owners to other people; stock represents ownership in the property.

Public utilities borrow more money than other classes of business, 50 per cent of their capital in many cases. "Industrials" on the average borrow less than 20 per cent. The great stability of the former enables them to pay out more of their gross income in interest without danger of default than "industrials" can pay.

The yield on various classes of securities varies with the risk involved. On the best bonds, the rate approaches that received from savings banks and government bonds. Preferred stocks and common stocks, because of their greater risk, command higher rates. The particularly safe underlying public utility bonds yield 5½ per cent, some even less. The general yield is about 6½ per cent (as this is written late in 1923). Public utility preferred stocks yield 6 to 8 per cent, and common stocks 7½ to 10 per cent on the prices paid for them.

It is customary in issuing bonds to fix the nominal rate of interest so that they will sell a little under par. This gives the investor an incentive to buy, as the bonds are retired at par.

The term "yield" used above means the average annual return that the investor actually gets on the money invested, including adjustment for discount or premium. Tables for determining this yield accurately can be found in bankers' handbooks. When the yields given above are considered with due reference to brokerage and other selling expenses, the 8 per cent usually allowed by public service commissions is none too high. Back in 1920, when money was very scarce electric light and power bonds were yielding 8¼ per cent, as contrasted with 6.2 per cent which they were yielding in 1923.

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†Abstract of lecture delivered before the employees of the Boston Elevated Railway, under the auspices of the Massachusetts Department of Education, Division of University Extension.

*See issue of "Co-operation" for January, 1926, page 71.

Bonds as Investments

It is desirable now to take up in some detail the characteristics of the several types of securities.

A bond is a promissory note for a certain amount which the borrower promises to pay, say, twenty or possibly even fifty years hence. It differs from an ordinary note, however, in that one bond represents only part of a debt. Bond issues are authorized in certain total amounts, but the bonds need not all be issued all at one time. They are of two kinds—coupon and registered. The former are transferable at will and coupons can be deposited, when due, like bank checks. Registered bonds can be transferred only by having the registration changed. Interest on them is paid by check. Bonds are frequently secured by mortgages on present and future property.

Bond owners are usually represented by a trustee, usually a trust company for permanence, and the trustee looks after the owners' interests. The mortgage or trust deed, usually termed an "indenture," describes the proceeding under which the trustee protects the rights of the bondholders. The trustee may foreclose on the property in the event that the bond interest is not paid regularly.

Nominal interest on bonds is usually 5 to 6 per cent. They are also usually issued subject to being called, in whole or in part, at a specified premium, say 5 to 10 per cent of par. The premium is remuneration for the enforced sale of holdings.

With most bond issues is provision for a sinking fund which insures increasing security behind the bonds. Also there are sometimes limitations, such as the amount of new construction that may be financed by bonds, say 75 per cent of the cost, or there may be the proviso that no new bonds may be issued unless gross income available for interest on outstanding and proposed issues is, say 1½ times or twice the interest requirements. Occasionally "serial bonds" are issued, for such work as road construction, to be paid off in annual installments.

Bonds are issued in $1000, $500 and $100 denominations. The last named are termed "baby" bonds and are issued for the convenience of small investors.

Bonds are issued in several varieties, such as first and second mortgage bonds, consolidated mortgage bonds, general and refunding bonds, etc., with various degrees of security. Then there are coupon notes, not secured by mortgages; short-time notes, to cover loans from banks to supply current funds, and equipment trust certificates. These certificates are a form of serial mortgage on rolling stock. They have been largely used in the purchase of one-man cars throughout the country.

Capital Stock as Distinguished from Bonds

In Massachusetts, and New England generally, capital stock of one class may represent ownership in a property. The holder of shares owns an equity proportionate to his holding in the entire issue.

Stock, however, is usually of two classes, preferred and common. The former has the prior claim on the property and on dividends, when earned, and usually pays 6 or 7 per cent on the par value. It occupies a position midway between bonds and common stock. Among the means taken to render preferred stock attractive are:

(1) Giving it a cumulative character—that is if dividends are not paid when due, they will be paid up when earnings warrant,

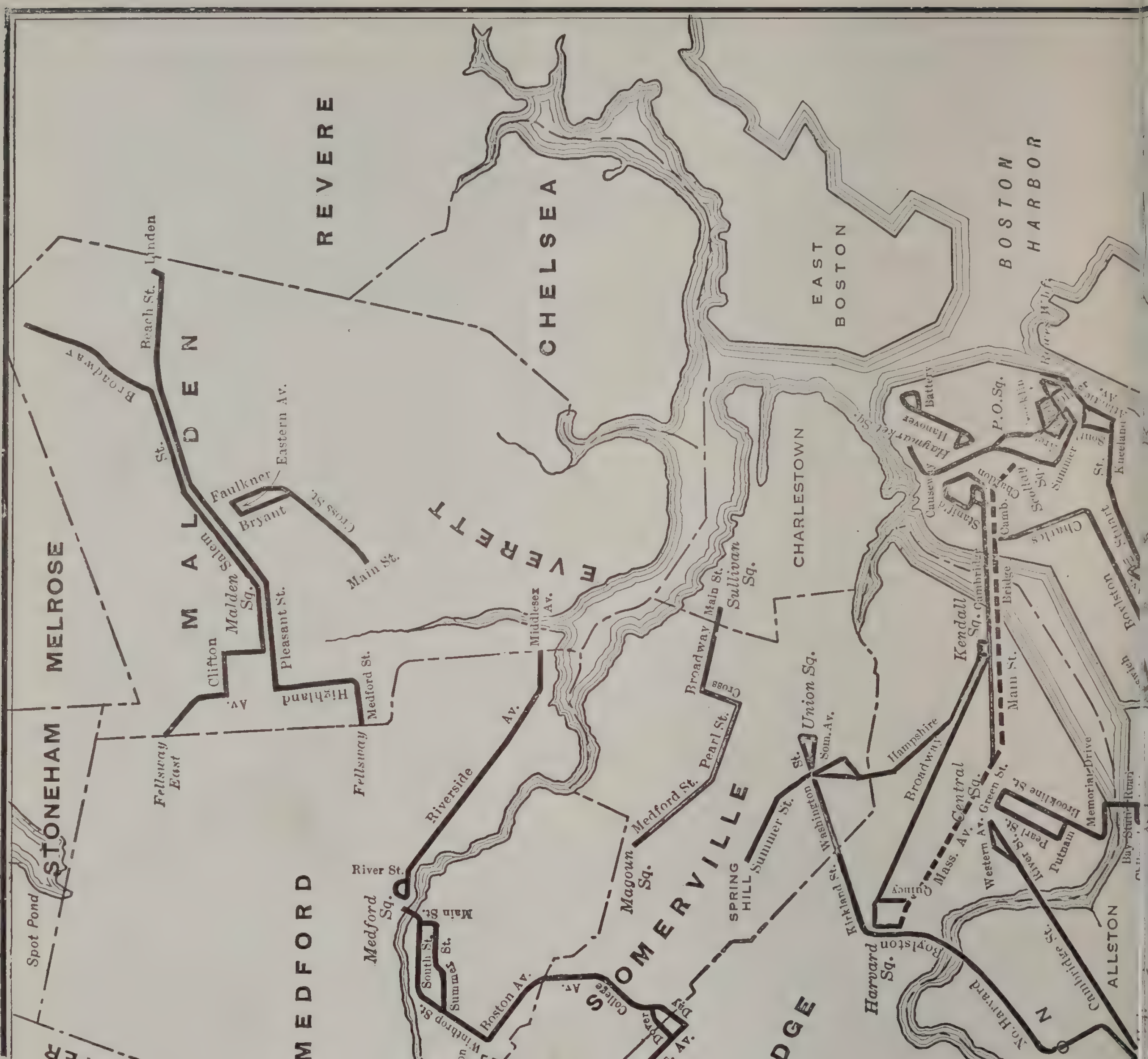
(2) setting up sinking funds to safeguard the issue,

(3) prescribing limitations of issue with respect to net income, etc.

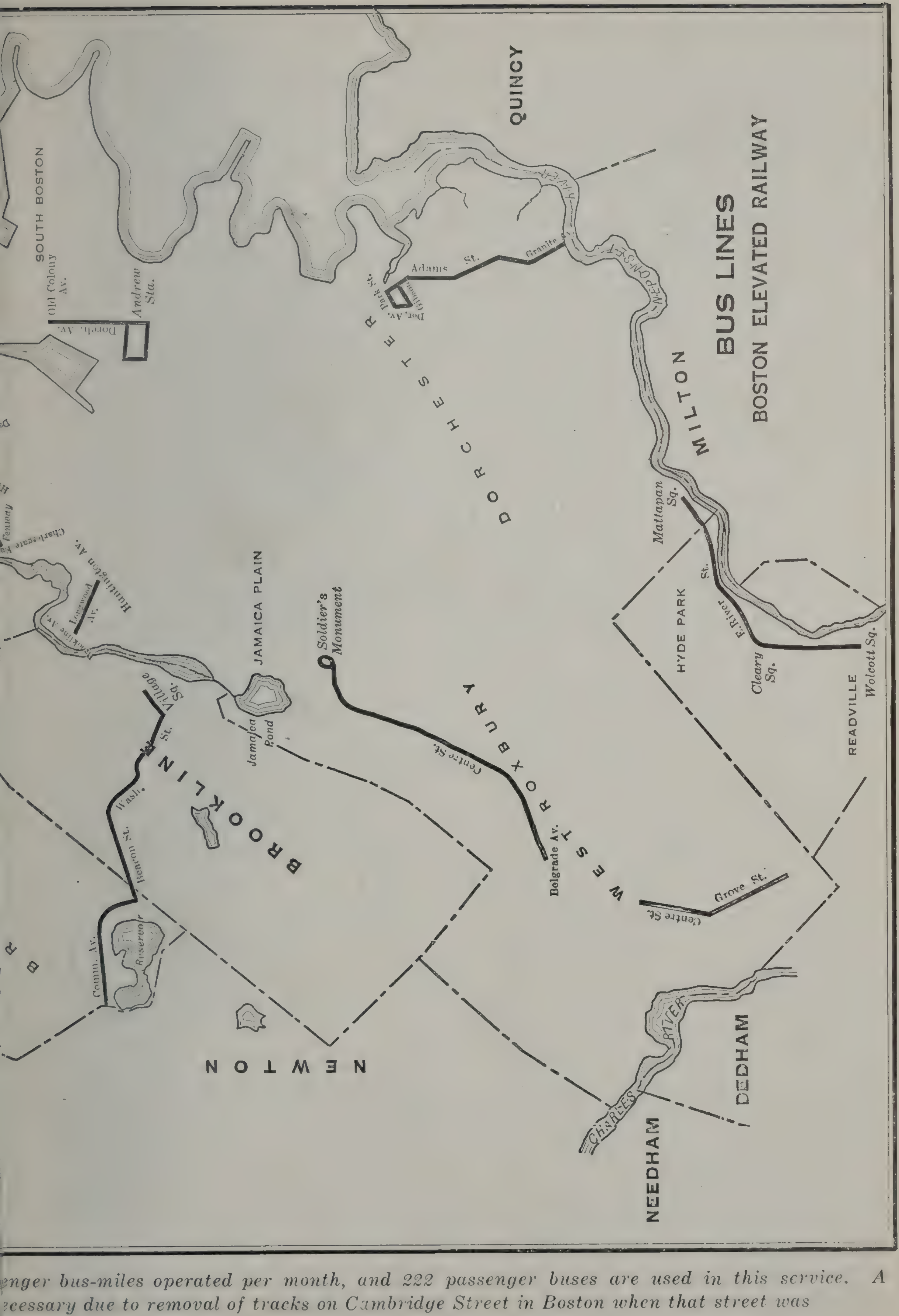
Preferred stock is sometimes split into first and second preferred, the second being supplementary to the first. Then there is "prior preferred" stock placed ahead of other issues.

Common stockholders take what is left after the creditors' and preferred stockholders' claims have been satisfied. Hence the market value of common stock fluctuates with the degree of prosperity of the business.

In this connection a few words regard-



The present mileage of street covered by bus routes is 53.5. There are more than 400,000 pa
dotted line will be noticed on the map. This represents a night bus route which became
widened as part of the ne



nger bus-miles operated per month, and 222 passenger buses are used in this service. A ecessary due to removal of tracks on Cambridge Street in Boston when that street was northern traffic artery.

ing so-called "watered" or "bonus" stock are in order. In the up-building or financing of a property, common stock is often included with bonds or preferred stock by way of payment for risks taken by the constructors, promoters and bankers. For example, a company, in selling securities, may combine an issue of preferred and common stock, putting out the two kinds together in a "block," or sell a $1,000 bond and perhaps five shares of common stock with it for not more than $1000. Or, ten shares of preferred stock having a par value of $1000, and five shares of common stock of the same par value per share may be sold in a "block" for $900. This practice is largely responsible for the use of the terms "bonus" and "watered" stock.

"Watered Stock"

Now, the common stock sold in this way is not a bonus. The price of the "block" is higher than could be secured for the bond or preferred stock alone. It often happens that the purchasers of the "blocks" get no dividends for several years, although the preferred stock has preference as to dividends, and dividends may become cumulative after several years. These purchasers will rely on the ultimate market value of the common stock to offset the early loss in dividends. In very many cases the sum of the early losses about equals the par value of the miscalled "bonus" common stock.

Similarly the stock paid to bankers is not a bonus, but is in return for services. It is a payment on a contingent basis, their reward being in proportion to the success of the enterprise.

Recently the plan of issuing stock without par value has been developed to avoid technical irregularities in issuing stock, and to increase its salability. Legal restrictions may prevent the issuing of stock with a stated par value for less than this value, including of course a reasonable allowance for brokerage and other costs of issuing (usually about 10 per cent). There can be no misrepresentation of value in connection with "no-par-value" stock and no question as to whether it is "full paid"* or not.

No-par-value stock was first authorized in New York State in 1912, and now (1923) there are thirty-four states which authorize it and twenty-three states which authorize no-par-value preferred stock. A certificate for this stock simply calls for a certain number of shares out of a specified total, indicating a corresponding share in the equity in the property involved.

What Are "Rights?"

In connection with the issuing of stock there developed what are known as "rights." This term covers the privilege enjoyed by stockholders of purchasing new issues of stock at less than the market prices. The privilege is justified because they own proportionate shares in the business and these shares are not changed by an increase in holdings proportionate to previous holdings. This stock, of course, may be sold at market prices, or the right to purchase it at the low prices may be sold. The value of these "rights" is approximately the difference between the market price of the shares and the issuing price to stockholders.

When a corporation decides to secure new capital the problem arises as to the best kind of security to issue. This depends on:

(1) The age of the business,

(2) its current profitableness,

(3) the general condition of the money market,

(4) the amount of each class of security already standing,

(5) the use to be made of the proceeds of the sale of securities, *i.e.*, whether for profitable business or something like street paving which is not profitable,

(6) franchise conditions.

Bonds are sold when a company is first organized because it has a limited market for stock due to its not having an established earning record; also at other times when money rates are high because the stock sells low. A high yield on stock continues indefinitely, whereas bonds mature at a fixed rate and unless otherwise stated on their face they may be "called" whenever money conditions become favorable. Bonds are issued when the long range trend of money is upward and when business is not particularly prosperous.

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*Stock may have been issued for part of its par value with the understanding that the balance may be assessed on the owners at any time. It is important to know this fact when buying stock.

Stocks Are of Two Kinds

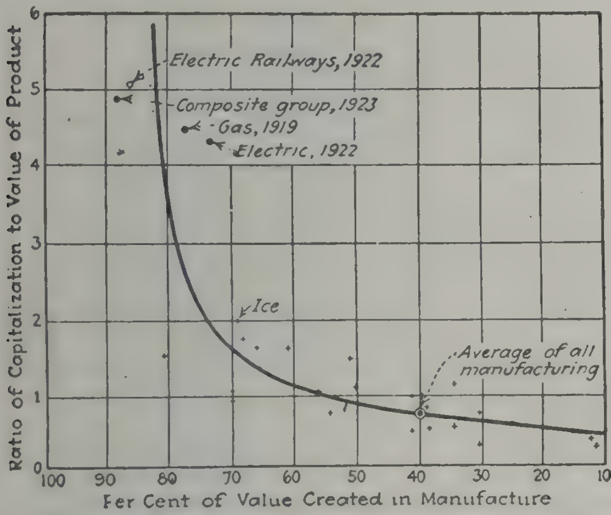
Preferred stock, which usually comprises from 10 to 20 per cent of the outstanding capitalization, is sold when the business has become fairly stable and when money rates are reasonably low.

Common stock is sold when the business is prosperous and when money rates are low. A rising trend in prices is favorable for such sale.

Coupon notes are sold when business is depressed and money rates are high.

When business is very bad utilities do not finance at all or they secure bank loans.

Income taxes affect the issuing of securities, but this subject introduces complications too extended for treatment here.



Utilities Require Much Capital, but Create a Large Part of the Value of Their Product

For a period of nine or ten years before the World War the percentage of public utility obligations (bonds and notes) issued to total issues was 75. From 1918 to 1920 it increased to 81. Notes alone increased from 16 to 46 per cent during the period of high money costs. There was a strong tendency to short-term obligations. The issues of stock decreased from a pre-war percentage of 17 to 6 per cent during the post-war period.

Public Utilities Are Large "Value Creators"

By way of summary of this subject, it is well here to restate why public utility capitalization is so high and explain this more in detail. Public utilities differ from other businesses in the larger extent to which they create value in their product. *E.g.*, in the manufacture of shoes, the components leather, thread, nails, findings, etc., are purchased; only 38 per cent of the selling price represents added value. Electric railways, on the other hand, create from 80 to 90 per cent of the value of their product; gas companies create about 77 per cent, and electric light and power companies 73 per cent. The more the value created the more the equipment, and therefore the investment, required.

On the average all manufacturing industries in the United States invest 72 cents for each one dollar of value of goods which they sell per annum and create 40 per cent of this value. Recent figures for some utilities are: gas, $4.50 and 73 per cent; electric railways, $6 ($4.50 for the Boston Elevated Railway) and 80 to 90 per cent; a selected group of between thirty and forty water, electric light and power, hydro electric and other properties, $5 and 88 per cent. Thus public utilities are not over capitalized for the values that they create.

For further reading in connection with the subject of capitalization a few references will be given.

In Chapters V, VII, VIII, IX and X of "Applied Business Finance," by Dr. E. E. Lincoln, there is an extensive discussion of methods of capitalization. In the "Stone & Webster Journal" of May, 1917, appears an article by the writer on "Principles of Public Utility Financing." In the "Journal of Political Economy," April, 1922, is an interesting article on "Recent Tendencies in Corporate Financing," and in the "Stone & Webster Journal" for February, 1923, Russell Robb wrote on "Real Security in Investments." Mr. Robb's article points out the danger of selecting investments on the basis of the ratio of gross income to interest requirements, without careful analysis of the character of the earnings, corporate relations, etc.

The committee appointed to grade the papers presented in the accident prevention examination held at the Sullivan Square schoolroom on June 15 have been studying the papers all summer and have just made the following awards:

Delegates to the National Safety Congress

Auld, George A	Op. Div. 2
Dwyer, John	Op. Div. 1
Finn, Carroll F.	Op. Div. 1
Gwinnearth, Godfrey	M.M.R.T.L.
Johnson, Alfred	Op. Div. 3
Landers, Chester B	Op. Div. 4
Lennon, Leo V	Op. Div. 2
McKenna, John J	Op. Div. 4
Miller, Harlow A	Op. Div. 4
Pratt George A	Con. Div. 3
Reitchel, Paul O	Gua. R. T. L.
Thorp, Oscar J	Op. Div. 2
Walsh, John J	Op. Div. 1
White, W. J	Op. Div. 3

Recipients of $10 Each in Gold

Amoroso, V.	Op. Div. 2
Bain, David	Op. Div. 2
Bates, James L.	Op. Div. 4
Blandford, Henry S	Gua. R. T. L.
Bryant, Roland A	Op. Div. 4
Burgess, Charles A	Op. Div. 3
Burnham, Henry C	M. M. Div. 3
Carleton, Leslie J	Op. Div. 2
Carmichael, James A	M. M. Div. 1
Caverly, James S	M. M. R. T. L.
Crowley, Patrick J	Con. Div. 1
Czedik, J. J	Op. Div. 3
Daly, D.	M. M. Div. 4
Dean, J. A	Op. Div. 3
Doherty, John A	Op. Div. 1
Donoghue, Michael	Op. Div. 1
Donoghue, Patrick F	Op. Div. 2
Dunn, James E	Op. Div. 4
Dwyer, Michael J	Op. Div.1
Fitzpatrick, Wm. J	Gua. R. T. L.
Ford, James E	M. M. Div. 2
Gale, John L	Op. Div. 2
Glynn, P.	Op. Div. 3
Goldstein, David B	Op. Div. 2
Goring, D. J	Op. Div. 3
Goud, Harold	Op. Div. 4
Griffin, Daniel G	Op. Div. 1
Hall, Wm. J	Op. Div. 3
Halpen, David	Con. Div. 3
Harris, Wm. A	Gua. R. T. L.
Hatch, C. H	Op. Div. 3
Healey, John J	Op. Div. 3
Hennessey, Richard	Op. Div. 1
Hoar, Wm. E	Op. Div. 1
Howley, Joseph P	Op. Div. 2
Hucksam, Wm. J	Op. Div. 2
Hynes, Denis	Op. Div. 3
Katz, M. J	Op. Div. 1
Kennedy, J.	M. M. R. T. L.
Kennedy, John A	Op. Div. 1
Kenny Luke M	Op. Div. 4
Keohane, Cornnelius J.	Gua. R. T. L.
Keough, Patrick	Op. Div. 1
Kimpton, W. A	Op. Div. 4
Kirby, Wm. J	M. M. R. T. L.
Koenig, Henry C	Op. Div. 3
Lang, M. J	Op. Div. 2
Lee, James J	Op. Div. 4
Leeman, Ray A	Gua. R. T. L.
Lewis, George H	Op. Div. 4
Litchfield, Lawrence J	Op. Div. 2
Lowe, Charles A	M. M. R. T. L.
Lugrin, Bertrand F	Con. Div. 4
Lydon, Peter J	Op. Div. 2
Lyons, Richard J	Op. Div. 2
McCarthy, Dermot	Op. Div. 2
McCarthy, John B	Op. Div. 2
McCrystal, Charles W	Con. Div. 2
Macdonald, Duncan A	Op. Div. 4
McGovern, John	Con. Div. 3
McHugh, John J	Op. Div. 4
McKenna, Thomas F	Op. Div. 4
MacLeod, Edgar E	M. M. R. T. L.
MacLeod, James A	Op. Div. 1
MacLeod, Joseph A	Con. Div. 4
McMath, Joseph M	Gua. R. T. L.
Mahoney, Michael	M. M. Div. 3
Manuel, Wallace E	M. M. R. T. L.
Matheson, A. J	M. M. R. T. L.
Menes, Benjamin H	M. M. R. T. L.
Miner, Albert S	Op. Div. 4
Molloy, T. A	Op. Div. 1
Moore, Charles N	Op. Div. 2
Morse, Charles H	Op. Div. 1
Murphy, James F	Op. Div. 4
Noonan, Joseph F	Op. Div. 2
Nugent, John T	Gua. R. T. L.
O'Brien, James F	Gua. R. T. L.
O'Donnell, Edmond A	Op. Div. 2
O'Donnell, Martin M	Op. Div. 1
O'Gara, J. J	Con. Div. 3
Olson, Guy T	Gua. R. T. L.
Pearce, Arthur W	M. M. Div. 1
Poirier, Lorenzo F	Gua. R. T. L.
Pope, Juna	M. M. R. T. L.
Pouche, Joseph	Op. Div. 4
Puopolo, Rocco	Op. Div. 4
Ross, Charles N	Op. Div. 1
Shanks, James, Jr	Gua. R. T. L.
Smith, Raymond V	Op. Div. 4
Sullivan, James D*	Op. Div. 3
Sullivan, Patrick G	Con. Div. 1
Tierney, Edward L	Op. Div. 3
Tresilian, Guy H	Op. Div. 1
Tuffey, John R	Op. Div. 2
Waldron, Henry E	Con. Div. 1
Walsh, Wm. P	Op. Div. 4
Whalen, Raymond W	Op. Div. 3

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*Mr. Sullivan was awarded $25 instead of $10 because his paper had special excellence and he was ineligible to be sent to the Safety Congress.

YOU AND YOUR CAR

Permission has been secured from the National Safety Council through the Massachusetts Safety Council for the reprinting of portions of a series of leaflets with the above title. Extracts will appear in "Co-operation" from time to time and it is suggested that every driver of a motor car check himself by means of these practical suggestions. Every driver will be interested in the following:

Good Manners in Motoring

Robbins B. Stoeckel, Commissioner of Motor Vehicles of the State of Connecticut, has proposed the following code of ethics or good manners in motoring:

"To be a good driver, in the terms of applied ethics, is to be a person of good manners, truly an altruist, ready to see and appreciate the problems of others, to make proper allowance for them and to exercise even a little more patience, care and consideration than is actually called for by the letter of the law.

"Driving an automobile through water or mud so as to splash same on pedestrians is a common pastime with some motorists who have peculiar ideas of what constitutes a joke.

"Give proper warning to pedestrians and other users of the highway. Even animals should receive reasonable notice.

"The horn should be reserved for safety purpose; not to signal a person inside of a house nor to attract the attention of people passing.

"Give proper attention to headlights. They often cause inconvenience and danger to others.

"Disobeying the instructions received from traffic officers and trying to steal a few feet of space, instead of remaining in a proper spot, not only annoys pedestrians and other motorists, but is a dangerous practice.

"Starting an argument with a traffic officer is not only bad etiquette, but is courting trouble with the law.

"'Keep in the middle of the road' is a tip that has been construed literally by the roadhog. Drivers of heavy vehicles should keep to the right side of the highway where they belong.

"The expert driver must tone down his skill by not weaving in and out of a stream of traffic moving moderately.

"A common offense against road etiquette is committed when a motor car operator places his car at a crossing so as to obstruct pedestrian traffic, thus compelling pedestrians to walk around his machine.

"Drivers who wish to be considerate of other people will concentrate on what they are doing, look where they are going, not attempt to gaze at passersby and stay in line.

"The exercise of kindness to others, consideration and true courtesy will prevent any operator from getting a wrong attitude of mind for driving in traffic. Any operator who loses his temper, who becomes sulky, or is abnormal from any one of many different causes is unfit to drive because his automobile provides a medium of expression for his personality. If that personality is upset, he is bound to make trouble for himself or for others, generally for both."

BONDS AND MORTGAGES AS INVESTMENTS

At one of the meetings in the course in investing savings held last season the topic of bonds and mortgages was treated by Pliny Jewell, vice-president Coffin and Burr.*

In introducing him, Chairman L. J. Dickey said that Putnam's "Investment Handbook" is a good book for general reading on the subject of investments and he urged all members of the class to get and read it.

Among the things that Mr. Jewell said were the following:

The war largely changed the habits of the people in this country as to investments. Many millions bought war bonds and thus used a form of investment new to them. Before that their savings had been put largely into real estate, co-operative and savings banks and perhaps trust companies and national banks. Outside of these they knew little about investments although some money was put into small mortgages usually in the investor's home locality. The war bonds taught people that capital put out at interest is a useful commodity.

Another recent development is customer and employee ownership of public utility and industrial securities. Ten to fifteen thousand United States Steel Corporation employees own its shares.

When people realize that money has responsiblity and is entitled to wages just like individuals they think on sounder lines economically than they otherwise would.

Footnote: *A stenographic report of Mr. Jewell's talk with the accompanying discussion will be found in the Boston Elevated Railway Library.

In approving this abstract for publication Mr. Jewell called attention to the difficulty of condensing a large and somewhat technical subject into the time limitations of a single talk and obviously the greater one of covering the subject in a brief abstract.

There has been a great deal of outcry against bond and investment houses but if it were not for such houses many large and important undertakings would not have been possible. What the investment banker does is to take the small savings of large numbers of people and make them available for great undertakings.

The important thing for people who are investing money is to determine who the reliable dealers are. It is popular to "slam" Wall Street, but Wall Street has played and is playing an important part in the business development of the country. There are crooks in Wall Street but no more than elsewhere.

In this connection a distinction should be made between a broker and a dealer in securities. The broker buys and sells on commission, but the investment dealer is a merchant. He makes an investigation of a security and if he approves it his salesmen sell it. The members of the stock exchange are brokers, although they may also be dealers, but it must be remembered that the function of the stock exchange is to provide a market. It does not pretend to furnish safety but merely gives an opportunity to buy and sell. In other words the exchange simply provides a market place.

Mr. Jewell discussed the various types of bonds, placing at the top the various federal government bonds. They are good because all the taxing power of the United States is behind them. The same is true of state and city bonds.

As to corporation bonds, railroad bonds have been considered a standard type of security and, although for a time their credit was injured because they were not permitted to earn a fair return, this condition has been remedied. Utility bonds are good because their commodities are instantly consumed and paid for. There are no unpaid bills. In the case of the Boston Elevated Railway the rider pays when he gets upon the car; in the cases of gas, electric, telephone or water service, the service is shut off if the bills are not paid.

While the bonds of these and other corporations are good, industrial corporations are strongest when financed as far as possible on a stock, and not on a bond basis. A bond is a promise to pay (whether or not secured by property); stock represents ownership in the enterprise. The bondholders are limited in their return, while the stockholders are not. On the other hand if interest is not paid, the bondholder can enforce payment.

As suggested, some bonds are secured by property, that is they are mortgage bonds, while some are not. The mortgage principle, as applied to real estate for example, is very simple. A man borrows up to a certain percentage of the value of his property, he makes his payments from time to time, and if he cannot keep up his payments the mortgage is foreclosed. Corporation mortgages are more complicated because they frequently contain a great many details. The underlying principle, however, is the same.

Asked as to the relative values of first and second mortgages Mr. Jewell said that if everything goes along smoothly the second mortgage is all right, but when there is trouble mortgaged property sometimes shrinks in value very fast. As the first mortgage must be satisfied first there is sometimes little or nothing left for the second. No person with limited means should go into second mortgages on real estate as an investment.

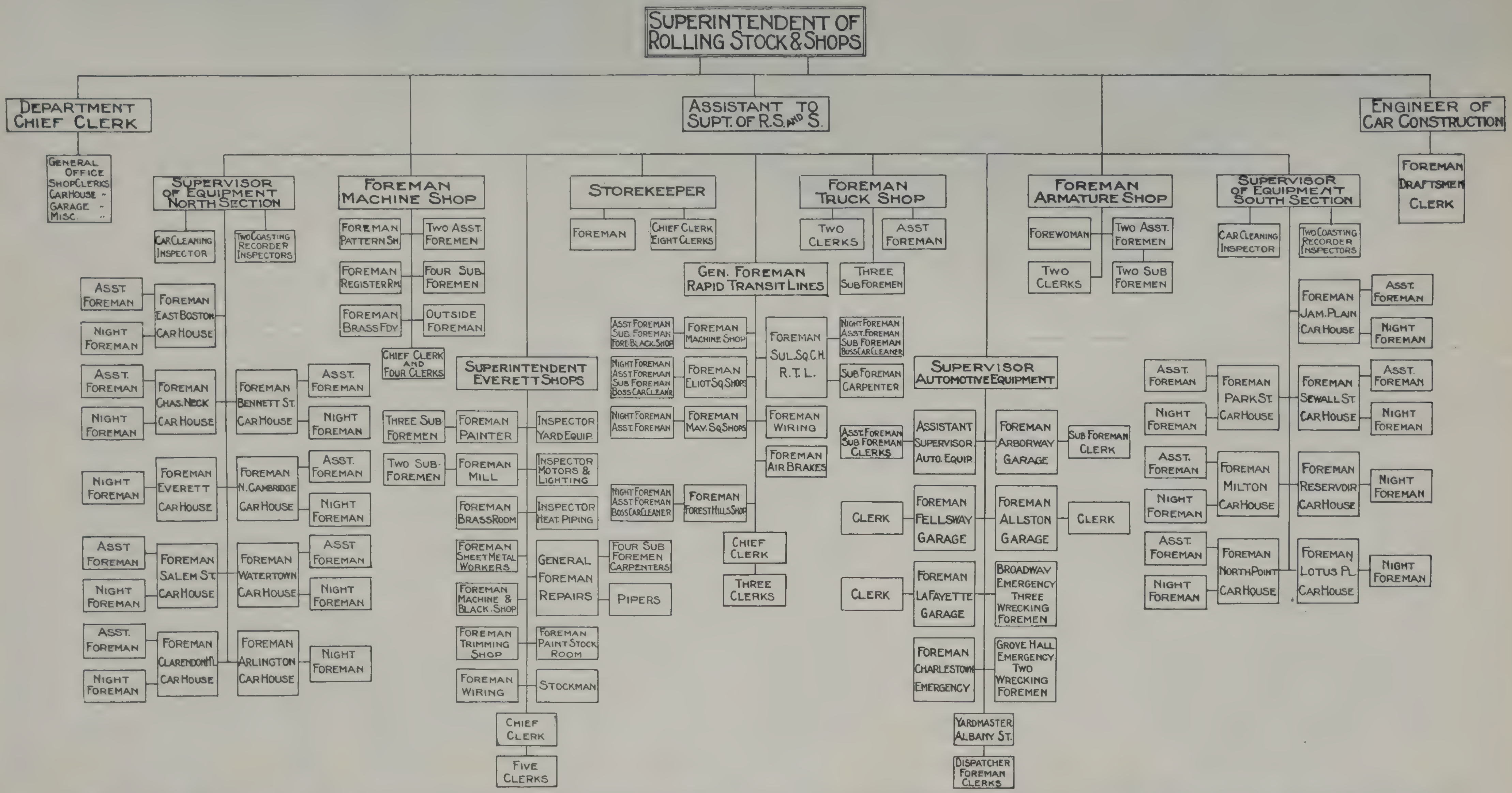
Asked as to whether it is advisable for a small investor to buy bonds from a banking house, leaving them with the bank as collateral, paying a small margin, and then paying the rest off in a year or two, Mr. Jewell was inclined to favor this plan. It is a form of compulsory saving. A little money pledged out of earnings to pay for bonds in this way is well invested, but one should not get into a position where his efficiency is injured by worry over such an investment.

As to leanings of investors for particular types of securities Mr. Jewell said that as long as one keeps within the cardinal principles of investment he is entitled to his predilection in that respect. But an investor must not get to the point where he thinks he is an expert unless he is actually so.

Let's Co-operate to Make "Co-operation" More Interesting and Useful

The success of a company publication like "Co-operation" depends on the assistance given by employees to make it interesting. The general manager will be pleased at any time to receive information regarding personal achievements of employees, incidents in connection with the service of the railway which deserve notice and any other items likely to interest large numbers of employees.

ORGANIZATION OF DEPARTMENT OF ROLLING STOCK & SHOPS


SUPERINTENDENT OF ROLLING STOCK & SHOPS
DEPARTMENT CHIEF CLERK
GENERAL OFFICE SHOP CLERKS CARHOUSE - GARAGE - MISC. "
ASSISTANT TO SUPT. OF R.S. AND S.
ENGINEER OF CAR CONSTRUCTION
FOREMAN DRAFTSMEN CLERK
SUPERVISOR OF EQUIPMENT NORTH SECTION
CAR CLEANING INSPECTOR
TWO COASTING RECORDER INSPECTORS
ASST. FOREMAN
FOREMAN EAST BOSTON CAR HOUSE
NIGHT FOREMAN
ASST. FOREMAN
FOREMAN CHAS. NECK CAR HOUSE
NIGHT FOREMAN
NIGHT FOREMAN
FOREMAN EVERETT CAR HOUSE
ASST FOREMAN
FOREMAN SALEM ST CAR HOUSE
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FOREMAN CLARENDON HL. CAR HOUSE
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FOREMAN BENNETT ST. CAR HOUSE
ASST. FOREMAN
NIGHT FOREMAN
FOREMAN N. CAMBRIDGE CAR HOUSE
ASST. FOREMAN
NIGHT FOREMAN
FOREMAN WATERTOWN CAR HOUSE
ASST FOREMAN
NIGHT FOREMAN
FOREMAN ARLINGTON CAR HOUSE
NIGHT FOREMAN
FOREMAN MACHINE SHOP
FOREMAN PATTERN SH.
TWO ASST. FOREMEN
FOREMAN REGISTER RM.
FOUR SUB FOREMEN
FOREMAN BRASS FDY.
OUTSIDE FOREMAN
CHIEF CLERK AND FOUR CLERKS
SUPERINTENDENT EVERETT SHOPS
THREE SUB FOREMEN
FOREMAN PAINTER
INSPECTOR YARD EQUIP.
TWO SUB-FOREMEN
FOREMAN MILL
INSPECTOR MOTORS & LIGHTING
FOREMAN BRASS ROOM
INSPECTOR HEAT. PIPING
FOREMAN SHEET METAL WORKERS
GENERAL FOREMAN REPAIRS
FOUR SUB FOREMEN CARPENTERS
PIPERS
FOREMAN MACHINE & BLACK. SHOP
FOREMAN TRIMMING SHOP
FOREMAN PAINT STOCK ROOM
FOREMAN WIRING
STOCKMAN
CHIEF CLERK
FIVE CLERKS
STOREKEEPER
FOREMAN
CHIEF CLERK EIGHT CLERKS
FOREMAN TRUCK SHOP
TWO CLERKS
ASST FOREMAN
THREE SUB FOREMEN
GEN. FOREMAN RAPID TRANSIT LINES
ASST. FOREMAN SUB. FOREMAN FORE. BLACK. SHOP
FOREMAN MACHINE SHOP
NIGHT FOREMAN ASST. FOREMAN SUB FOREMAN BOSS CAR CLEAN'R
FOREMAN ELIOT SQ. SHOPS
NIGHT FOREMAN ASST. FOREMAN
FOREMAN MAV. SQ. SHOPS
NIGHT FOREMAN ASST FOREMAN BOSS CAR CLEANER
FOREMAN FOREST HILLS SHOP
FOREMAN SUL. SQ. C.H. R.T.L.
NIGHT FOREMAN ASST. FOREMAN SUB FOREMAN BOSS CAR CLEANER
SUB FOREMAN CARPENTER
FOREMAN WIRING
FOREMAN AIR BRAKES
CHIEF CLERK
THREE CLERKS
FOREMAN ARMATURE SHOP
FOREWOMAN
TWO ASST. FOREMEN
TWO CLERKS
TWO SUB FOREMEN
SUPERVISOR AUTOMOTIVE EQUIPMENT
ASST. FOREMAN SUB FOREMAN CLERKS
ASSISTANT SUPERVISOR AUTO. EQUIP.
FOREMAN ARBORWAY GARAGE
SUB FOREMAN CLERK
CLERK
FOREMAN FELLSWAY GARAGE
FOREMAN ALLSTON GARAGE
CLERK
CLERK
FOREMAN LA FAYETTE GARAGE
BROADWAY EMERGENCY THREE WRECKING FOREMEN
FOREMAN CHARLESTOWN EMERGENCY
GROVE HALL EMERGENCY TWO WRECKING FOREMEN
YARDMASTER ALBANY ST.
DISPATCHER FOREMAN CLERKS
SUPERVISOR OF EQUIPMENT SOUTH SECTION
CAR CLEANING INSPECTOR
TWO COASTING RECORDER INSPECTORS
FOREMAN JAM. PLAIN CAR HOUSE
ASST. FOREMAN
NIGHT FOREMAN
ASST. FOREMAN
FOREMAN PARK ST. CAR HOUSE
NIGHT FOREMAN
FOREMAN SEWALL ST. CAR HOUSE
ASST. FOREMAN
NIGHT FOREMAN
ASST. FOREMAN
FOREMAN MILTON CAR HOUSE
NIGHT FOREMAN
FOREMAN RESERVOIR CAR HOUSE
NIGHT FOREMAN
ASST. FOREMAN
FOREMAN NORTH POINT CAR HOUSE
NIGHT FOREMAN
FOREMAN LOTUS PL. CAR HOUSE
NIGHT FOREMAN

This is the fifth in a series of charts showing the organization of the Boston Elevated Railway. The following charts have been issued previously: December, 1925, general organization; February, 1926, transportation department; May, 1926, maintenance department; June, 1926, power department.

CHANGES IN THE RESERVE FUND

Fiscal Year 1925-26

July 1, 1925, $1,000,000

July	$249,477.93*	Jan.	$223,301.90†
Aug.	367,593.94*	Feb.	185,989.63*
Sept.	176,763.97*	Mar.	161,772.65†
Oct.	117,703.96†	April	77,031.69†
Nov.	45,265.00†	May	57,010.06†
Dec.	289,347.71†	June	1,662.18*

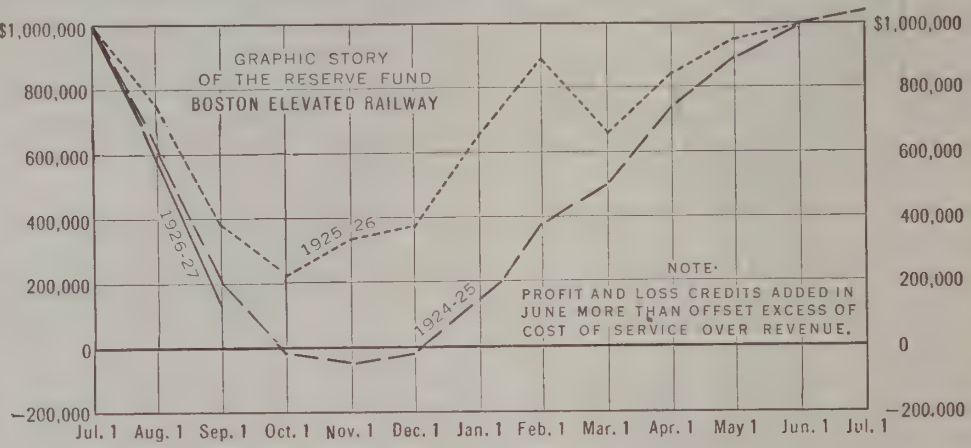
Profit and loss credit.....$32,359.07

Fiscal Year 1926-27

July 1, 1926, $1,000,000

July	$393,028.41*
Aug.	451,546.79*

†Excess of revenue over cost of service. *Excess of cost of service over revenue



AUGUST OPERATION

GENERAL FINANCIAL DATA	1926	1925
Cost of service exceeded revenue	$451,546.79	$367,593.94
Operating revenue per car-hour (A. E. R. A. std.)	$5.18	$5.34
Operating revenue per car-mile operated	53.44c	55.24c
Average fare per revenue passenger	9.259c	9.266c
Ratio operating expense to operating revenue	85.58%	82.65%
PASSENGERS CARRIED		
Revenue passengers	26,381,206	26,298,086
Per cent 5c and 6c passengers	17.85%	17.56%
Revenue passengers per car-mile operated	5.581	5.844
OPERATING FACTS		
Trips operated	620,648	588,783
Car-miles operated:		
Rapid-transit lines	1,178,062	1,193,091
Surface, two-man	1,910,074	1,967,046
Surface, one-man	1,226,329	1,089,149
Express, newspaper and sprinkler cars	1,356	11,951
Motor bus	410,958	238,249
Total miles operated	4,726,779	4,499,486
ACCIDENT DATA		
Accidents per 10,000 car-miles	1.96	1.95
Accidents per 10,000 bus-miles	4.64	4.11
Revenue passengers carried per accident	31,109	29,907
Average number of witnesses per accident	2.03	3.5
COMPLAINTS AND DEFECTS		
Complaints in regard to car service	5	16
Employees complained of by car riders	82	103
Car defects reported per 10,000 car-miles	3.8	4.5
INFORMATION ABOUT POWER		
D.c. kw.-hr. output gross per month	16,508,140	16,434,970
Maximum kw. load	55,060	54,300
Tons of coal consumed	15,569	14,801
Lbs. of coal burned per d.c. kw.-hr. at cars	2.118	2.023
Oper. and maint. cost, including depreciation:		
Per d.c. kw.-hr. for car service	1.21c	1.23c
Per revenue car-mile	4.22c	4.43c
Kw.-hr. per revenue car-mile	3.495	3.553

Sept. 20, 1926.

EDWARD DANA, *General Manager.*

ALLIED PRINTING TRADES UNION LABEL COUNCIL BOSTON

BOSTON ELEVATED RAILWAY

CO-OPERATION

Volume 5 OCTOBER, 1926 Number 10

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INCREASE CAR RIDING

It has been stated that if the riding habit of the population served could be increased to 365 rides a year per capita nearly seven and one-third million dollars of additional revenue would be secured.

Did you ever stop to think how much of this could be secured if the entire organization was determined to sell our service by building up a reputation for courtesy at all times? Customers who appreciate that we attempt to serve them courteously will ride more frequently and get others to use a system where they are assured of courteous treatment and interest in their welfare.

It is a fact that the complaints for discourtesy thus far this year have been reduced six per cent but why should we have discourteous treatment of customers on the railway?

As a matter of fact we should not have, and those who are bringing such criticism upon us would be unable to carry on a business of their own successfully.

Sell our product and thus make it possible to meet added expense through the medium of increased revenue.

"A RIDE A DAY KEEPS POOR SERVICE AWAY"

To All 'L' Employees

THE three summer months in which revenue fails to exceed expenses have now passed and we know definitely what our problem is for the next nine months.

July showed a deficit of $393,028.41; August a deficit of $451,546.79; and September, a deficit of $236,543.80, or a total deficit of $1,081,119.00. The reserve fund has been more than exhausted. Including profit-and-loss items it has been overdrawn by $104,836.32.

It is incumbent upon every single individual comprising the Elevated family to visualize just what this means and resolve to be an effective agent in overcoming this loss during the months ahead.

Eight thousand individuals, mindful of the problem, interested in its solution, can succeed if they desire day by day to do so.

You are individually responsible for either materials or time, or both, and can see to it that neither is wasted.

You are in a public service, yet if you treat your daily work as if it was your own business the problem ahead will not be difficult.

Watch for the leaks and stop them. Make suggestions to your superiors that will either lead to the saving of time or money, or the rendering of improved service.

Take the problem to heart, it is as much your problem as that of anyone else in the world, and real teamwork and co-operation will win.

On the other hand, no organization in which employees take a "Let George Do It" attitude can possibly hope for success.

Edward Dana

MORE THAN $800 WOULD HAVE BEEN SAVED IF THE OWNERS OF THESE CARS HAD COME DOWNTOWN BY TROLLEY

SOME AUTOMOBILE ECONOMICS

The use of the parking space opposite the front of the Park Square Building suggests in a striking way the situation regarding the use of the automobile for getting to town for business purposes.

Photographs of this space taken recently showed approximately 678 cars, about evenly divided between small and large ones. Let us see what expense the presence of these cars downtown involves and what the relative cost of getting there by electric car would be.

The cost of operating the smaller type of automobile may be estimated at 7 cents per mile, and of operating the larger type 13 cents per mile. This estimate covers insurance, interest, depreciation, gasoline, tires, oil, garage expense and repairs. The total of these items for the small cars is $575 and of the large cars $1,020 per year.

Assuming that the life of a car is five years, its total mileage 40,000 and the average number of passengers 1.7, the comparative cost of transportation by automobiles and trolley cars works out as follows for the cars parked as shown:

Kind of car	No. of cars	Cost per car-mile	No. of miles per car (es-ti'm't'd)	Parking charge	Total cost
Small	339	7c	12	35c	$403.41
Large	339	13c	12	35c	647.49
	Total				$1,050.90

That is, 678 cars with an average of 1.7 passengers carry 1,153 passengers at an average cost of 91.1c per person.

On the other hand 1,153 passengers can be carried by trolley at 20 cents per person, a total of $230.60.

Thus the saving by trolley would be $820.30.

READING COURSES PLANNED

At the closing exercises in the educational program last spring, President D. L. Marsh of Boston University stated that if a person would use 15 minutes a day in systematic reading he could acquire a liberal education. Mr. Dana took up Dr. Marsh's suggestion and asked him to outline a plan for such systematic reading. Later Dr. Marsh appointed a committee of the faculty of Boston University which has worked out a simple but practical plan. This will be explained at a general "reading course meeting" to be held at the instruction schoolroom, Sullivan Square, on Tuesday, Nov. 9, at 7.30 p.m. All employees who would like to learn about this plan without committing themselves to registration are invited to attend. Explanations will be made by several members of the faculty of Boston University who will direct the details of the reading.

KEEP OUT OF THE WAY OF FIRE APPARATUS

An examination was held in June, 1926, to assist in the selection of men to attend the National Safety Congress at Detroit. Among the questions asked was this one: "What should be done by a motorman or operator when his car is between streets in heavy traffic and he hears the whistle of the fire apparatus and cannot tell where the apparatus is; and why he should do so?" Here are some of the answers:

"I would stop my car right away and find out the direction in which the fire apparatus is going. The fire apparatus has the right of way over street cars at all times."

"I would stop my car, because if I proceeded not knowing where the apparatus is going I am liable to hinder them and possibly get in trouble."

"The law of the State says that a motorman must stop his car on the approach of the fire apparatus and remain so until it has passed. That is what I would do."

"I would stop my car instantly to be sure that the car would not obstruct the passage of fire apparatus, no matter what direction it came from."

"Stay there. It wouldn't be safe to move when you don't know where it is coming from; also a violation of the company's rules."

"Stop your car instantly but be careful to stop it so as not to block them, because the fire apparatus has the right of way."

"Stop at once. Have the conductor see just where the apparatus is headed and where it is coming from."

"When the car is standing do not start before you know everything is safe; if the car is moving, stop immediately except in traffic."

"Stop the car at once, seeing I am not obstructing traffic as I am between streets. Stop for a minute and ascertain from which street they usually come, and from which fire house they are coming."

"I would stop the car immediately because the fire department has the right of way, and also to avoid a chance of the driver of the apparatus becoming confused and possibly colliding with the moving car."

"Stop the car and find out where the fire apparatus was moving and thus give them the chance to pass my car. According to law, a street car must stop and give the fire apparatus the right of way."

"My rule says for me to stop until I have a signal from someone I know, such as a policeman, fireman or inspector, to proceed with safety, or until I myself know that it is safe to proceed."

"Stop the car immediately and ascertain the direction of the fire apparatus and when the fire apparatus has passed and it is safe to proceed, start the car on signal."

"Bring the car down to a nice stop, and do not stop at a corner of the street so as to block traffic or fire apparatus and give them room to pass in either direction. Stop between streets, using good judgment."

"Stop the car quickly, or if possible stop my car so as not to block the traffic between the streets or so that my car will not block the fire apparatus or cause accident of any kind."

"Stop and stay stopped until you observe and see it is safe to proceed, unless signaled by police officer, because yourself and company are in for serious trouble if you interfere with their right of way, and when you go, run slow and ring your gong prepared for instant stop."

"Knowing the whistle was fire apparatus and that there was clearance ahead, to go to safely for car and passengers. If congestion is such that it is impossible to clear the street I must stop without any further delay, using the greatest care taking the handles on the rear end of car, making it safe for car and passengers."

What is the law?

"Every motorman of a car upon a street railway shall, upon the approach of any fire apparatus going to a fire or responding to an alarm, immediately stop said car and keep the same at a standstill until such apparatus has passed. Violation of any provision of this section shall be punished by a fine of not more than twenty-five dollars."

THE HABIT OF READING

An increasingly large number of people in Boston as elsewhere are appreciating what books can do for them. On the trolley cars and buses one always sees a great number of people who are immersed in reading books of real value, many of them, of humor, of romance. For those who are busy all day long, the journey to and from work is a wonderful opportunity to read; the lunch hour, too, is a good time to feed the mind as well as the body. The biography of a successful man or woman is an inspiration to do your own job to the very best of your ability.

A WELL-MERITED REWARD

For their sound views on the subject of accident prevention, reinforced with good records showing knowledge of practice as well as theory, a group of fourteen representative transportation men was selected to represent the railway at the fifteenth annual Safety Congress held under the auspices of the National Safety Council, Detroit, Mich., October 25 to 29. The selection was made on the basis of an examination held on June 15 and on the accident record from January 1.

As this issue of "Co-operation" goes to press, the men have left for the Congress. The delegation comprises the following: George A. Auld, Op., Div. 2; John Dwyer, Op., Div. 1; Carroll F. Finn, Op., Div. 1; Godfrey Gwinnearth, M.M.R.T.L.; Alfred Johnson, Op., Div. 3; Chester B. Landers, Op., Div. 4; Leo V. Lennon, Op., Div. 2; John J. McKenna, Op., Div. 4; Harlow A. Miller, Op., Div. 4; George A. Pratt, Con., Div. 3; Paul O. Reitchel, Gua., R. T. L.; Oscar J. Thorp, Op., Div. 2; John J. Walsh, Op., Div. 1; W. J. White, Op., Div. 3.

The accompanying group picture was made after the delegation was selected toward the close of September.

GROUP CONFERENCES BEGIN

The employees of the transportation, rolling-stock and shops and maintenance departments who are interested in discussing some of the important things about their work will meet during the coming season in a series of five conferences in each department. The first conferences will be held as follows: Transportation, Nov. 5; rolling-stock and shops, Nov. 3; maintenance, Nov. 2.

F. L. Sennott, inspector R. T. L., is chairman of the transportation group; J. M. Patten, foreman truck shops Albany Street, heads the rolling-stock group, and E. L. Lockman, assistant engineer surface lines, will be in charge of the maintenance group.

The programs will consist of entertainment and talks by practical men on some of the live phases of railway work. These conferences will be of somewhat the same character as those held two years ago, but they will come about once a month, so that attendance upon them will not be burdensome to any member of the organization.

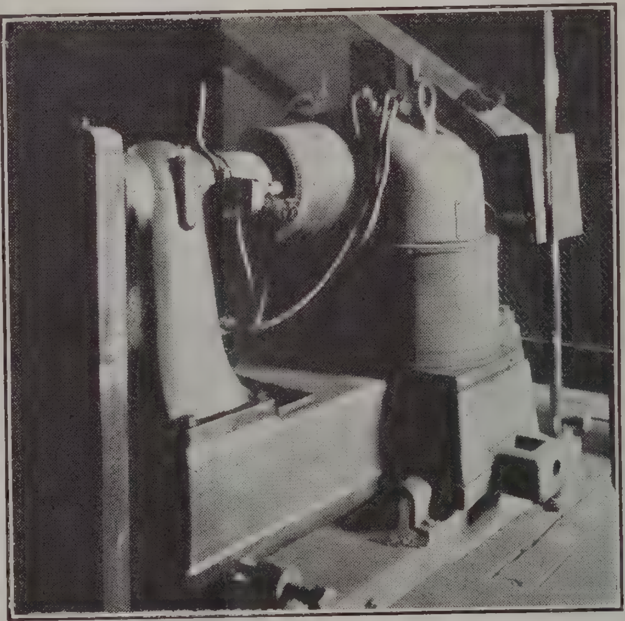
OUR REPRESENTATIVES AT DETROIT

Back row, left to right: J. Dwyer, H. A. Miller, J. J. Walsh, L. V. Lennon, G. A. Auld, O. J. Thorpe. Middle row, left to right: G. A. Pratt, G. Gwinnearth, P. O. Reitchel, W. J. White, C. B. Landers, C. F. Finn. Front row, left to right: J. J. McKenna, A. Johnson.

AN OLD-TIME GENERATOR

In the August "Co-operation" there was an article referring to one generator, alone, at South Boston Tower Station of 40,000 kilowatts capacity which generates enough power to carry the entire "El" system on a Sunday, whereas one generator of 36 years ago did not have sufficient capacity to run one present day Cambridge subway car.

The accompanying illustration shows a Type D-62 Thompson-Houston generator of 62 kilowatts capacity, which was purchased in 1889, the year the first electric cars were operated in Boston. It is now at our old Bartlett Street shops, where it is doing duty as a motor driving shafting for an elevator. A similar machine in 1924 was presented by the Boston Elevated Railway to the historical collection of electrical apparatus in New York City, where it has been set up as originally designed. As the curator of the museum expressed the situation: "It represents a type of generator which played an important part in the early days of electric traction, not alone in Boston but in Brooklyn, and New York City, when their first electric cars were operated."



THIS MACHINE WAS A GIANT IN ITS DAY

The machines at Bartlett Street were originally a part of an installation in the old boiler room of the Hinkley Locomotive Works on Harrison Avenue, which was bought in 1889.

The old boiler house was designated as Central Power Station No. 1, only to be lost sight of when the new and present central power station was completed and the old station was no longer required. Its site is now occupied by the headquarters of the Power Department.

In a newspaper article at the time of the opening of the line from Park Square to Oak Square-Brighton in January, 1889, the four 80-horsepower generators at the Allston power station were referred to as "huge affairs," and again in 1898 we note an article headed "The Largest Dynamo in the World." It refers to the "monster ordered by the Boston Elevated Railway Company of 3,000 kilowatts capacity." Now we have a generator of 35,000 to 40,000 kilowatts capacity and we hear of machines, elsewhere, being designed with a capacity several times larger.

The total generating capacity of our units has increased from 720 kilowatts when the first lines were run in 1889, to 20,108 kilowatts in 1898, and over 100,000 kilowatts at present.

The following figures give a good comparison of past and present generators:

Thompson-Houston D-62 Generator 1889		Turbo-Generator South Boston 1926	
Length	6 ft. 6 in.	Length	51 ft.
Width	4 ft.	Width	20 ft.
Height	5 ft.	Height	18 ft.
Weight	4,900 lb.	Weight	800,000 lb.
Capacity	62 Kw.	Capacity	40,000 Kw.
Speed	900 r. p. m.	Speed	1,500 r. p. m.

PUBLIC UTILITY ACCOUNTING*

By L. R. Nash

THE purpose of accounting is to set forth current and cumulative financial results of the operations of an enterprise for the information of its executives, stockholders and other investors, and of commissions, taxing authorities and the general public.

Accounting systems were first developed by the people who owned public utility properties. Twenty-five years ago, Stone & Webster, operating public utilities all over the country, designed uniform accounting systems for use on these properties. This was probably the beginning of the standardization of accounting.

Although the Massachusetts Railroad Commission began to prescribe accounting systems for steam railroads in Massachusetts in 1867, it was not until forty years later that real standardization of accounts was a fact. The Interstate Commerce Commission, and the Wisconsin and New York commissions led in this standardization, and their examples have been generally followed. *The present classification of accounts for electric railways* is a 1914 revision of a system designed in 1908 by the I. C. C. for use of interstate railways, but it has been generally adopted by state commissions. It is now undergoing further revision. More recently classifications have been developed for electric, gas and telephone companies.

For accounting purposes, revenues, expenses and other transactions are subdivided into small groups so that unusual variations can readily be traced and an incentive to economy furnished.

Sub-divsion can be carried so far as to be unnecessarily expensive, hence a balance must be preserved between the cost of accounting refinements and the saving in operating costs which may be expected from those refinements.

There are *six different kinds of accounts* in public utility accounting systems: (1) revenues; (2) operating expenses; (3) income (rather a statement than an account); (4) profit and loss; (5) capital, and (6) the balance sheet. These accounts are kept in a number of books, such as the general ledger, the cash book, the journal and voucher register, the construction ledger, and many others of little present interest.

1. Revenue Accounting

Revenue is not necessarily cash, although it is largely so on electric railway properties. It is either cash, or charges to customers for services rendered, set up for the month in which they are rendered.

The revenue of electric railways is made up of "operating revenue" and "non-operating revenue." The former, in turn, comprises "transportation revenue" and "revenue from other operations." Transportation revenue comes from passenger and freight receipts, mail, express, etc. Revenues from "other operations" include those resulting from sale of steam or power, rentals, receipts from concessions, news-stands, checking privileges, etc.

More than 90 per cent of the Boston Elevated Railway revenues come from passenger receipts.

An electric light and power company has a wider range of service and can split up its revenues into a larger number of groups.

2. Operating Expenses

The sub-division of operating expenses used in electric railway accounting is different from that used in other utilities. Electric light and power accounts are sub-divided, first, on a functional basis; into (1) production of electric power, (2) distribution expense, and (3) general. Each group is divided in turn into maintenance and operation.

Electric railway operating expenses are sub-divided into (1) maintenance, (2) operation, and (3) general (office expenses, clerical services, damages, etc.). In 1914, when the I. C. C. revised the railway classification, it added a new group of accounts covering production and transmission of power, and left the maintenance accounts in that group. It therefore requires a separate calculation to determine a maintenance total out of the operating expenses.

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*Abstract of lecture delivered before the employees of the Boston Elevated Railway, under the auspices of the Massachusetts Department of Education, Division of University Extension.

To illustrate the way in which operating expenses are sub-divided, the practice of the Boston Elevated Railway may be cited. There are a hundred primary accounts, as follows: maintenance of way and structures, 28; maintenance of equipment, 16; production of power, 18; conducting transportation, 16; traffic, 4; general and miscellaneous, 18. The purpose of the classification is to get the amounts in the several groups down to a reasonable value for comparison.

The Boston Elevated sub-divisions are in general geographical; for example, way and structures accounts are divided according to districts. Removal of snow is divided so that the cost of actual removal can be separated from that of hauling away. One account covers maintenance of passenger and combination cars, including car bodies, trucks and other mechanical equipment. This is sub-divided into surface, elevated and tunnel cars. Again, car bodies are separated into different types. Miscellaneous equipment comprises registers, fenders, fare boxes (with and without motor drive) and air-brake equipment. There is a separate group of accounts for trucks and another for passenger buses. In the power group there is an account for each power station, and the labor accounts include boiler-room employees, engineers, oilers, switchboard attendants, etc.

3. The Income Statement

An income statement may be made up for a month, a fiscal year or any other period. It gives first a summory of the operating accounts, revenues and expenses, one amount for the total of each. The difference, the "net operating income," is then shown. If any other, or auxiliary, business is done, the resulting net revenue is added to the net operating income.

From the total operating revenue the taxes assignable to operating property are deducted, leaving the "operating income." To this is added the net revenue from investments in property not used in operation but rented.

The total of all revenues, after deducting the corresponding expenses, is the "gross income" (formerly called "net earnings"). From this are deducted taxes on other than operating property, provision for amortization of investment, rentals of leased lines, equipment, etc., and items of such general character. This leaves the "net income," which goes to the "profit and loss" account and belongs to the stockholders. They can use it for dividends, or otherwise as they see fit.

4. Profit and Loss

The profit and loss balance is usually set up in an annual "profit and loss" statement. It shows (1) the balance at the beginning of the year, (2) the amount added from the year's operations, and (3) incidental items from other sources such as profits on sales of property. From the total of these are subtracted (1) dividends paid, (2) appropriations from surplus for settling up reserves and (3) settlements of delayed debit items that have been in existence for some time. This leaves the balance of "profit and loss."

5. Capital Accounts

The "capital accounts" include investments in the fixed property of the company. They number about fifty—including nine for equipment, six for power-producing facilities, etc. These correspond closely to the maintenance accounts, making it possible to determine maintenance costs in percentage of fixed capital.

6. The Balance Sheet

The balance sheet is so called because on it are set up, on one side, assets, and on the other, liabilities, the sums of which must balance.

The general rule in setting up a balance sheet is that the important items shall come first. In public utilities the most important item is the fixed property—track, rolling-stock, overhead, power station, etc. Thus, in a public utility balance sheet, fixed capital comes first. Next are current assets, such as cash, advance payments such as rent and insurance,* notes receivable, accounts receivable, materials and supplies, etc. Then come deferred assets, including such items as sinking fund. retirement fund, insurance and, sometimes, investments. An investment that can be readily disposed of should be included in current assets. Then there is a group of "unadjusted assets," or "suspense" accounts. These include accounts for work in progress, apportionment accounts, charges in dispute, value of abandoned property held in suspense until it can be pro-rated off, and discounts on, and cost of selling securities. Financing costs are set up in the suspense account and pro-rated during the life of the securities. The items grow from month to month, and eventually equal the difference between the par value of the securities shown on the balance sheet and the net amount realized from their sale.

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*These are reduced month by month as the proper amounts are transferred to the expense accounts.

Details of the Liabilities

Among the liabilities usually appear first the fixed liabilities, such as bonded debt, coupon notes, and stock of various classes. Then come current liabilities, including notes and bills payable, deposits made by customers (as in electric light and gas companies), unpaid matured interest, dividends declared but not paid. Then there is a group of unadjusted liabilities, sometimes called "reserves," including retirement reserve, insurance reserve, sometimes a reserve for contingencies, and apportionment accounts. There are also liability accounts for taxes that are paid at the end of the period for which they are due, the amounts being estimated and gradually accumulated to the end of the period. Finally there is the "surplus," which is what the company has earned in excess of all disbursements *from the beginning to date.*

Balance sheets are examined first for the surplus, as a general indication of the condition of the property. Then the cash on hand, together with the current liabilities and assets, come in for scrutiny. Materials and supplies on hand are important also. They permit a certain control of current assets, as they may be drawn down if necessary to conserve cash.

A typical excellent balance sheet, with the corresponding income statement, shows the following items: annual revenues, $2,000,000 for $7,000,000 investment, *i.e.*, $3.50 of investment per $1 of "gross"; cash on hand, $500,000; reserves and surplus, $2,500,000, indicating profitable operation; current liabilities, $250,000; current assets, $210,000.

By way of contrast, another property earned $1,000,000 with $4,500,000 invested; surplus and reserves, $60,000; current liabilities, $450,000; current assets, under $100,000. This company went into the hands of a receiver.

Units for Comparison of Operating Results

In comparing the operation of different properties certain "yard-sticks" are used. The most common is the "operating ratio," *i.e.*, the ratio between operating expenses and operating revenues. For electric railways 70 per cent is a good figure, under present conditions. Electric light and power companies often do better than 50 per cent.

Then, earnings and expenses are reduced to a unit basis, for electric railways usually the car-mile. There are objections to this unit because the earnings and expenses for different types of car, operating at different speeds, are not comparable. For a given property the unit figures simply give average values. Other units, such as the seat-mile, have been proposed, but the car-mile remains popular.

Accounting for Depreciation

The I. C. C. requires that all interstate railways make provision for the ultimate replacement of property elements as they wear out, or as they are retired for other reasons.

For example, when a car is bought an estimate is made of its useful life and of the salvage value thereafter. The difference, or "wearing value," must be written off uniformly during the useful life. This is compulsory for intrastate railways only if the state commissions so prescribe.

For way and structures and power-plant equipment the I. C. C. has not laid down hard and fast rules, but sees that the carriers make reasonable provision for retirements. If they prefer they may make appropriations from surplus, but they must explain the method in their annual reports.

The Boston Elevated Railway follows the above plan substantially, setting aside $2,000,000 or more annually for depreciation.

Utilities other than railways are adopting a different plan, which does not include the term "depreciation." It provides for a reserve to be set up so that the actual cost of a piece of property can be written off from the property account when it ceases to be useful. Such a "retirement" reserve is smaller than a "depreciation" reserve. The former might be less than 10 per cent, while the latter might be more than 20 per cent.

There are thus two systems for caring for depreciation, one of which sets up a reserve which in the long run will be very much higher than the reserve which otherwise would be provided. In the case of the Boston Elevated a large reserve was justified because the property offers ample opportunities to use such for needed present retirements or for temporary additions to the property until other retirements are required.

For the average property a rigid system of charging a fixed sum per month for depreciation, regardless of the prosperity of the company, does not seem desirable. Most companies do not have the use of a stabilizing fund as does the Boston Elevated Railway. Ordinarily the appropriation for depreciation should be made flexible with the prosperity of the railway (or lack of it), but with maintenance of adequate reserves at all times. That is the basis of the uniform system of accounts which the other utilities are using.

The Public Utility Budget

A word should be said, in concluding this topic, with regard to the budget. On a property operating on a budget basis, estimates are made at the beginning of each year, of (1) the revenues; (2) the expenses of operation, and (3) the cost of construction, etc. Some one is held responsible for each part of the budget, so that "over-runs" may not occur to upset the financial program of the year. Obviously such a plan is essential to the conducting of all large business.

ALERTNESS CONTEST CONTINUES

The wire and conduit division of the department of power is keeping up the alertness contest described in the June and July issues of "Co-operation." The interest in the contest continues unabated.

Since the last report the following crews have won in the contest:

July—"F" crew as follows: B. Tansey, W. B. McDonald, G. Worcester, A. Garvin.

August—"A" crews as follows: G. Langille, J. Best, E. White.

September—"Q" crew as follows: E. Beucler, H. Marshall, J. Quirk.

FINNIGAN TO FLANNIGAN

Superintindent wuz Flannigan;
Boss av th' siction wuz Finnigan;
Whiniver th' kyars got offen th' thrack
An' muddled up things t' th' divil an back.
Finnigan writ to Flannigan,
Afther th' wrick wuz all on agin;
That is, this Finnigan
Repoorted to Flannigan.

Whin Finnigan furst writ to Flannigan,
He writed tin pa-ages—did Finnigan.
An' he tould jist how th' smash occurred;
Full miny a tajus blundherin' wurrd
Did Finnigan write to Flannigan,
Afther the kyars had gone on agin;
That wuz how Finnigan
Repoorted to Flannigan.

Now Flannigan knowed more than Finnigan—
He'd more idjuc-aation—had Flannigan;
An' it wore 'im clane an' complately out
To tell what Finnigan writ about
In his writin' to Musther Flannigan.
So he writed back to Finnigan;
"Don't do sich a sin agin;
Make 'em brief, Finnigan!"

When Finnigan got this from Flannigan
He blushed rosy rid—did Finnigan;
An' he said: "I'll gamble a whole moonth's pa-ay
That it will be miny an' miny a da-ay
Before Sup'rintindint (that's Flannigan)
Gits a whack at this very same sin agin.
Frum Finnigan to Flannigan
Repoorts won't be long agin."

Wan da-ay on th' siction av Finnigan,
On the road sup'rintindid by Flannigan.
A rail gave way on a bit av a curve
An' some kyars went off as they made th' shwerve.
"There's nobody hurted," sez Finnigan.
"But repoorts must be made to Flannigan."
An' he winked at McGorrigan,
As married a Finnigan.

He wuz shantyin' thin, wuz Finnigan,
As miny a railroader's been agin,
An' th' shmoky ol' lamp wuz burnin' bright
In Finnigan's shanty all that night—
Bilin' down his repoort wuz Finnigan!
An' he writed like this: "Musther Flannigan:
Off agin. On agin.
Gone agin.—Finnigan."

From Columbus (Ohio) Press Post. Copied from "Heart Throbs" Published by The Chapple Publishing Co., Ltd., Boston.

NEW GUIDE AND INFORMATION BOOK

The 1926 edition of this useful handbook contains a number of revisions from the 1924 edition and is particularly noteworthy on account of the use of colors in the maps and on the cover. Copies have been distributed to all employees and if any employee fails to receive a copy he or she should ask for one at any departmental office. It is hoped that all employees will familiarize themselves with the contents of this book, which will be placed in the hands of the public within the next few weeks. The information contained will serve to permit almost any reasonable question about the transportation system of Boston to be answered correctly.

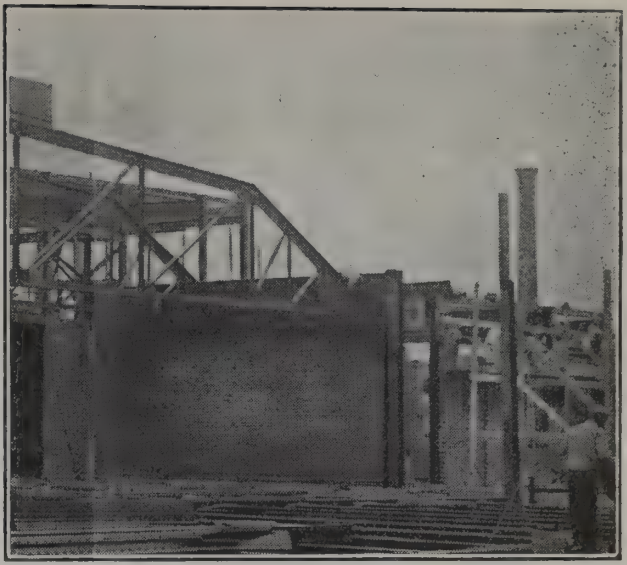
The colored illustrations involved the use of four sets of plates, one each for red, yellow, blue and black. The cover is printed from half-tone plates, the four impressions of which are accurately "registered" one over another. Transparent ink is used in printing so that one color shows through the others. It is difficult to realize, on looking, say, at the bright green trees, that there is no green ink used in the printing, the green being a combination of all of the four inks in suitable proportion. This is true with the other colors shown on the cover.

The first printing of the new edition will be 100,000 copies, all of which will be distributed within a few months.

LIGHTING THE ELEVATED

To provide necessary light for cars, stations, power stations and subways, over 110,000 electric lamp bulbs are used yearly, one-fifth of which, probably, represents more than our renewal a year.

An hour's burning of these lamps would cost $368 if paid for at the commercial rate.



This Automatic Fire Door Weighs 15,000 Pounds

MAMMOTH STEEL FIRE CURTAIN

The steel rolling fire curtain between the bus repair shop and the garage at Somerville is the largest hand-operated automatic closing fire curtain ever built by any rolling-door manufacturer, and weighs approximately seven and one-half tons. The door opening is about 35 feet by 14 feet. The gauge of the curtain is No. 16, U. S. standard gauge.

In case of fire, the fusible link holding the automatic starter will melt at 150 degrees, releasing a strong spring tension, over-balancing the curtain and causing the door to close to keep the fire from going from one room to another. The drop of the curtain is very slow, being retarded by a large escapment governor located on the chain operating bracket. The faster the curtain drops, the more the "automatic" holds back the speed, allowing the curtain to settle easily on the floor and preventing any accident which might be caused by the sudden drop of this curtain. This door may be raised or lowered easily by one man operating an endless chain hoist.

NEARLY TWO BILLION DOLLARS SAVED*

Bank president analyzes status of savings banks in Massachusetts and proves their popularity well deserved.

Mr. Joseph H. Soliday, president of the Franklin Savings Bank, Boston, was the speaker in the course in investing savings on March 1, 1926. He spoke on "savings banks as depositories for funds." A brief abstract of the address follows:

The mutual savings bank of Massachusetts is entitled to be ranked with the school and the church as a philanthropic institution, as can be illustrated from a quotation from the charter of the Provident Institution for Savings, which was the first of these banks in Massachusetts and in the country, dating back to 1816:

"The design of this institution is to afford to those who are desirous of saving their money, but who have not acquired sufficient to purchase a share in the banks or a sum in public stocks, the means of employing their money to advantage without running the risk of losing it, as they are too frequently exposed to do by lending it to individuals who either fail or defraud them. It is intended to encourage the industrious and prudent, and to induce those who have not hitherto been such to lessen their unnecessary expenses and to save and to lay by something for a period of life when they will be less able to earn support. To promote these desirable purposes the following rules, among others, have been adopted:" then it goes on with the rules and regulations.

The Provident Institution was started because there was no suitable place for the deposit of small amounts of money. Commercial banks did not encourage such deposits and there were not available the investments in stocks and bonds as now.

No particular effort was made to advertise this institution but the principle which it illustrated was gradually applied in other institutions until today there are 196 of them with depositors numbering more than 2/3 of the population of Massachusetts (2,827,848) and total deposits amounting to more than $1,775,000,000 (an average of $572 per depositor.) They receive about $67,000,000 a year in interest.

No trustee of the Provident Institution ever received a cent in compensation for his services, not even those who served as members of the Board of Investment.

The first consideration in investment is safety of principal. The fraudulent promoter tries to get people's money by promising large rates, which is just the opposite of the idea underlying the savings bank.

In 1833 the Massachusetts Legislature began the passing of laws regarding the investments of these banks. Under the law the bank receives a charter from the State and is a corporation without capital stock. There is no active ownership except that of the depositors and only they can profit by the prosperity of the bank. Of course, if the bank is well managed the officers may be paid larger salaries, but this is only as employees of the depositors.

The legislation relating to the investment of savings bank funds gradually developed, in applying the principle that an important element of safety is diversity of investment.

In the early days the limit that anyone could deposit was $1,000. Ten years ago the amount was increased to $2,000 and three years ago to $3,000, the present limit. Two persons may deposit in a joint account to double the limit and accumulations of interest on individual accounts can reach $3,000. By law the bank is not allowed to pay interest on an excess above $6,000. This limit is partly set because interest on deposits is free from income tax. The bank, however, pays a tax which would otherwise fall upon the individual.

At this point Mr. Soliday discussed a consolidated statement showing the assets of the 196 savings banks. Of their investments about 17½ per cent are in federal, state and municipal bonds and notes. In railroad bonds and notes the percentage is about 12½ per cent, and in street railway bonds slightly over 2 per cent. Banks are allowed to invest only in bonds of railroad and street railway companies which have paid dividends on stock for at least five years prior to the purchase. They have never been allowed to purchase stocks with the exception of stocks of trust companies in Massachusetts and of national banks in New England.

The most popular and the safest investment for savings banks consists of first mortgages on real estate. About 53 per cent is the investment in this security in Massachusetts.

The remainder of the funds in Massachusetts savings banks are invested in various utility bonds, in loans on personal security, that is, loans with collateral consisting of stocks and bonds with a margin of at least 20 per cent, in bank buildings, etc.

(Concluded on page 134)

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*Second in a series of abstracts of addresses in the course in 'Investing Savings.' L. J. Dickey, chairman.

EVOLUTION OF "EL" SERVICE

Percentages refer to service rendered by the different types of vehicles. Rapid transit is included.

25-ft. Box

1918	26.5%
1925	1.2%
1926	0.8%

26½-ft. Box

1918	3.4%
1925	1.6%
1926	1.0%

Articulated

1918	9.7%
1925	——
1926	——

Nos. 1, 2 and 3 "Semi"

1918	6.6%
1925	4.5%
1926	1.3%

No. 4 "Semi"

1918	19.4%
1925	13.6%
1926	11.9%

Trailers

1918	3.2%
1925	4.2%
1926	4.2%

Center-entrance

1918	3.9%
1925	19.8%
1926	18.3%

Birney Safety

1918	——
1925	1.0%
1926	0.7%

No. 5 "Semi"

1918	——
1925	23.3%
1926	27.9%

Motor Buses

1918	——
1925	3.1%
1926	7.4%

Rapid Transit

1918	25%	1925	26.9%	1926	26%

Foreign Cars

1918	2.3%	1925	0.8%	1926	0.5%

The above for each year total 100 per cent.

The above graphic statement of the changes in make-up of the service of the Boston Elevated Railway reflects tendencies in the railway industry generally and may well be studied in connection with the facts outlined on the front cover of the August issue of "Co-operation."

(Concluded from page 132)

Mr. Soliday mentioned as one of the greatest advantages of the savings bank that interest is automatically added and re-invested every six months. This saves the bother of clipping coupons for small amounts. Such coupons are oftentimes cashed and spent largely to avoid the trouble of depositing them.

Another thing is that the money can be drawn out at any time.

Most important of all is the element of safety, due to restrictions imposed by law which are carefully followed and to diversification of investment.

The depositors are safeguarded by guarantee funds and profit-and-loss accounts, which in Massachusets amount to nearly $133,000,000. This amount is sufficient to cover any possible shrinkage in investments. In many cases the income from these funds pays the entire expenses of running the bank.

When one realizes that $2,000,000,000 is the nation's annual loss through fraudulent promotion, of which $6,000,000 is taken from small investors in fraudulent promotions involving the use of the mails alone, the importance of security is evident.

Mr. Soliday quoted approvingly from "Putnam's Investment Handbook" as follows: "The first investment of the great majority of people should nearly always be a savings-bank deposit. It is usually the safest, and therefore the backlog of the whole scheme. It is always the best investment for the poor, and the first two or three hundred dollars accumulated by the moderately well-off should not only be put into savings banks but left there."

And also Mr. Soliday quoted from this same book as follows: "A savings bank official tells the story of a woman depositor in his bank who withdrew a thousand dollars to buy a certain well-known bond. She returned the other day and handed the bond over to the bank with the request that the bank sell it for her and place the money to the credit of her account.

" 'What is the matter? Don't you like this bond?' asked the banker.

" 'Oh,' she said, "I can't stand it any longer. Ever since I bought the bond I have been worrying about the price. In the morning I am all of a fever until I get the paper to see whether the price has gone up or down. I worry about it all day, and at night I lie awake thinking about my investment. I want to get back the peace of mind I had when my money was safe in the bank drawing 4 per cent interest. There is no market quotation on savings bank deposits.' "

He said that the latter quotation covers a typical case. A friend of his, a teller in one of the old Boston banks, who was a judicious investor, remarked when over 80 years of age: "I wish I had put my money all in savings banks at 4 per cent. I would have more today than I have."

Mr. Soliday's talk was followed by a lively discussion. In answer to the question why savings banks cannot pay more in interest he said that they have large holdings in government bonds which pay only 4¼ per cent, that they have railroad bonds paying as low as 3½ per cent put out when that was considered a liberal rate of interest. A tax of ½ of one per cent is paid on that part of the deposits invested in railroad, street railway and other utility bonds. Money rates on personal loans are around 4¾ per cent which is about all that can be had on "first-class paper" today and ½ per cent of that has to be paid as state tax.

A parallel was pointed out between the service-at-cost operation of a utility, like the Boston Elevated Railway, and the service-at-cost operation of the mutual savings bank. The question was what incentive there is for good management. It was shown that while theoretically there is a lack of incentive, there is as much enthusiasm in operating a mutual organization as one operated for profit. This is illustrated by the record of the life-insurance companies.

READING AND YOUR JOB

One day on a Fifth Avenue bus in New York a young woman had in her lap a copy of a book written in French, telling the life of a well-known French priest and explorer. She wasn't reading it at the time, but the names of the book and the author were easily seen. As the conductor approached her for her fare, a look of great interest came into his face. Eagerly, so spontaneously and enthusiastically that the young woman couldn't possibly be offended, he said, tapping the book, "Good reading, that!" Surprised and interested, she assented and asked if he were French. He said he was not, but that he read the language very well.

This man was one of the healthiest, most energetic people imaginable. He was apparently enjoying his job as a bus-conductor with an unusual zest. He seemed to take an out-of-the-ordinary interest in the passengers on the bus and appeared to be very happy. Perhaps this zest, this interest and this happiness came in part from the fact that he read books—good books, well-written books on a variety of subjects, that stimulated his concern with human beings and increased the pleasure of the contact he formed with them.

YOU AND YOUR CAR

Second in the series of suggestions put out by the National Safety Council is the following summary of "Rules of the Road:"

Do You Know and Obey These Rules?

Every state and community has its traffic laws, and drivers should be thoroughly familiar with all local requirements. A copy of the state laws can usually be secured by addressing the Secretary of State at the State Capitol; local ordinances from the police department.

There are, however, many laws that are practically universal and may be called common courtesies or rules of the road. Every driver should extend the same courtesies to "the other fellow" that he expects the other fellow to extend to him.

Every driver, of course, knows that he should pass to the right when meeting other vehicles going in the opposite direction. Slow moving vehicles should keep to the extreme right.

Always sound the horn and pass on the left when passing other vehicles going in the same direction, except street cars. When at street intersections, on curves, or when going up or down a hill, never try to pass another vehicle going in the same direction.

At street intersections give the right of way to the car at your right. Do not presume too much when you have the right of way; the other fellow may not know you have it.

When stopping or parking a car, see that the right side (not the left side) is within 6 or 8 inches of the curb. The wheels should be cramped to the right so the car cannot move far accidentally. Make sure that the emergency brake is on and that the gears are in neutral before leaving the car.

Always signal when preparing to stop, start, or turn. If possible, signal by extending the arm. If the car body or load prevents persons ahead or behind from seeing arm signals, a good type of mechanical signaling device should be installed on the car.

Sound horn three times before backing.

Every effort should be made to have non-glaring headlights. If yours are not of this type, dim them when approaching another car or a pedestrian in the dark.

See that your license tags are installed in the position specified by law and that they are clearly visible under all conditions. Keep them clean.

All traffic signs, including those used for the control of traffic at intersections, should be obeyed promptly and to the letter. "Slow Down" signs near schools should be observed as well as "Stop, Look and Listen" signs at railroad grade crossings.

When a change is indicated from "Go" to "Stop" or vice versa in the traffic control signal at an intersection, await the change. It is unsafe and discourteous to cross as the "Stop" signal flashes or to start before the "Go" signal has shown.

Drive on the right hand side of a parkway unless otherwise directed.

When intending to turn to the left, give signal at least 40 feet before reaching the turning point, move over to the centerline of the street (unless the local rule requires otherwise), slow down passing the intersection of the street and turn carefully to the left.

In turning either right or left, watch for pedestrians as well as vehicles.

Do not drive out of an alley, garage, or private property, without stopping to see if the way is clear. Sound your horn to warn others.

Do not leave the curb when parked, without signalling and seeing that your way is clear to drive into moving traffic. A moving line of traffic has the right of way.

Do not park within 15 feet of a fire plug, or in front of a mail box, or withing 25 feet of an intersection.

On the approach of fire apparatus, drive as near the curb as possible and **stop.**

In all cases of doubt or uncertainty slow down and stop.

THINK WHAT THIS MEANS!

According to the records of the Transit Mutual Insurance Company the longest period in which there were no death cases involving the company occurred this year. From April 26 up to the date this note was prepared none arose. Previous long periods were as follows:

Feb. 6 to Aug. 1, 1922	175 days
Aug. 5, 1924 to Jan. 12, 1925	160 days
Feb. 4 to July 12, 1924	159 days
Jan. 12 to June 18, 1925	157 days
Jan. 25 to June 20, 1923	146 days
Aug. 22, 1925 to Jan. 9, 1926	140 days
June 20 to Oct. 23, 1923	125 days

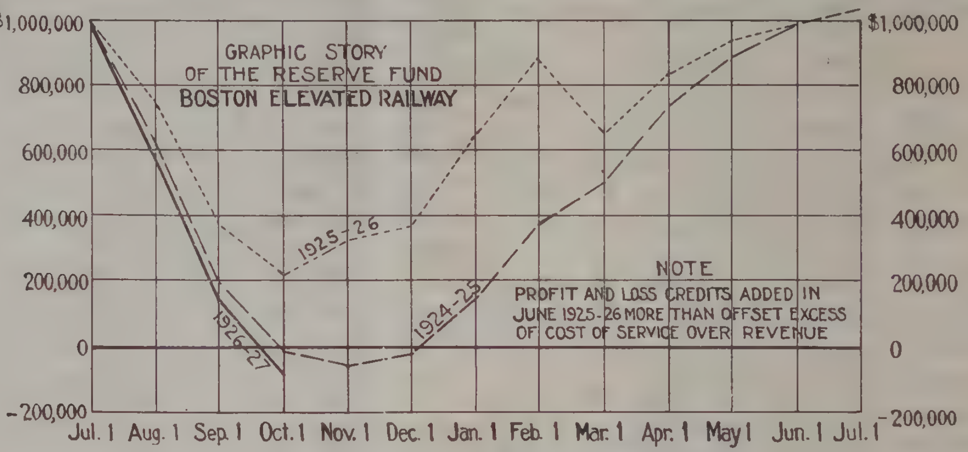
Street Car Conductor—"How old are you, my little girl?"

Little Boston Girl—"If the corporation doesn't object, I'd prefer to pay full fare and to keep my own statistics."—Exchange.

CHANGES IN THE RESERVE FUND

Fiscal Year 1925-26 July 1, 1925, $1,000,000				Fiscal Year 1926-27 July 1, 1926, $1,000,000	
July	$249,477.93*	Jan.	$223,301.90†	July	$393,028.41*
Aug.	367,593.94*	Feb.	185,989.63*	Aug.	451,546.79*
Sept.	176,763.97*	Mar.	161,772.65†	Sept.	236,543.80*
Oct.	117,703.96†	April	77,031.69†		
Nov.	45,265.00†	May	57,010.06†		
Dec.	289,347.71†	June	1,662.18*		
Profit and loss credit			$32,359.07		

†Excess of revenue over cost of service. *Excess of cost of service over revenue



SEPTEMBER OPERATION

GENERAL FINANCIAL DATA	1926	1925
Cost of service exceeded revenue	$236,543.80	$176,763.97
Operating revenue per car-hour (A. E. R. A. std.)	$5.65	$5.80
Operating revenue per car-mile operated	58.08c	60.01c
Average fare per revenue passenger	9.297c	9.306c
Ratio operating expense to operating revenue	78.94%	76.39%
PASSENGERS CARRIED		
Revenue passengers	28,172,344	27,791,882
Per cent 5c and 6c passengers	17.12%	16.90%
Revenue passengers per car-mile operated	6.059	6.349
OPERATING FACTS		
Trips operated	604,470	571,618
Car-miles operated:		
Rapid-transit lines	1,212,963	1,168,193
Surface, two-man	1,854,840	1,896,558
Surface, one-man	1,165,062	1,056,579
Express, newspaper and sprinkler cars	2,526	9,453
Motor bus	416,689	256,035
Total miles operated	4,652,080	4,386,818
ACCIDENT DATA		
Accidents per 10,000 car-miles	2.16*	2.05*
Accidents per 10,000 bus-miles	3.95	5.66
Revenue passengers carried per accident	26,022	28,867
Average number of witnesses per accident	4.13	3.26
COMPLAINTS AND DEFECTS		
Complaints in regard to car service	8	8
Employees complained of by car riders	88	78
Car defects reported per 10,000 car-miles	3.3	4.8
INFORMATION ABOUT POWER		
D.c. kw.-hr. output gross per month	16,584,460	16,461,300
Maximum kw. load	61,910	59,260
Tons of coal consumed	14,899	14,143
Lbs. of coal burned per d.c. kw.-hr. at cars	2.018	1.931
Oper. and maint. cost of power, inclu. depreciation..		
Per d.c. kw.-hr. for car service	1.18c	1.13c
Per revenue car-mile	4.21c	4.16c
Kw.-hr. per revenue car-mile	3.577	3.663

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*This does not include miscellaneous accidents.

October 20, 1926. EDWARD DANA, *General Manager.*

Volume 5 NOVEMBER, 1926 Number 11

*9388.744625

INCREASE CAR RIDING

Much has been accomplished since February 24, 1922, the date the first motor bus was used on the Boston Elevated Railway, in the effort throughout the country to utilize this new and flexible unit in producing co-ordinated transportation in a mass transportation area.

We now have 222 vehicles, with an investment in buses and garages of $2,300,000.

Lines upon which rail service could no longer be justified have been provided with service, and new lines of great value to the community have been installed.

If surface cars were to be operated on routes upon which buses are now operated, there would be required an investment for cars, rails, power and carhouses, of $9,400,000.

Undoubtedly this railway represents as complete a utilization of the motor bus to provide an extended and coordinated service as exists anywhere in the country.

Careful driving, a prerequisite of motor-bus operation, courteous treatment of customers, and an effort to discharge passengers conveniently at the curb, are necessary in the effort to cultivate more riders and render satisfactory service.

Secure all the fares, guard transfer losses,
cultivate more riders. It is our business.

"A RIDE A DAY KEEPS POOR SERVICE AWAY"

To All 'L' Employees

THE fact that patrons appreciate courtesy on the part of employees is illustrated by a letter recently received, which specifies two of the many ways in which courtesy can be shown. The letter reads, in part:

> Will you kindly add to your "roll of honor" the name of Conductor.., of the...............................line, who last evening rendered most considerate assistance to my aged father; likewise answered various queries in a courteous manner?

For every commendation there are numerous cases of courtesy which are not so recognized. Every courteous act, however, helps to build business and increase the usefulness of the railway.

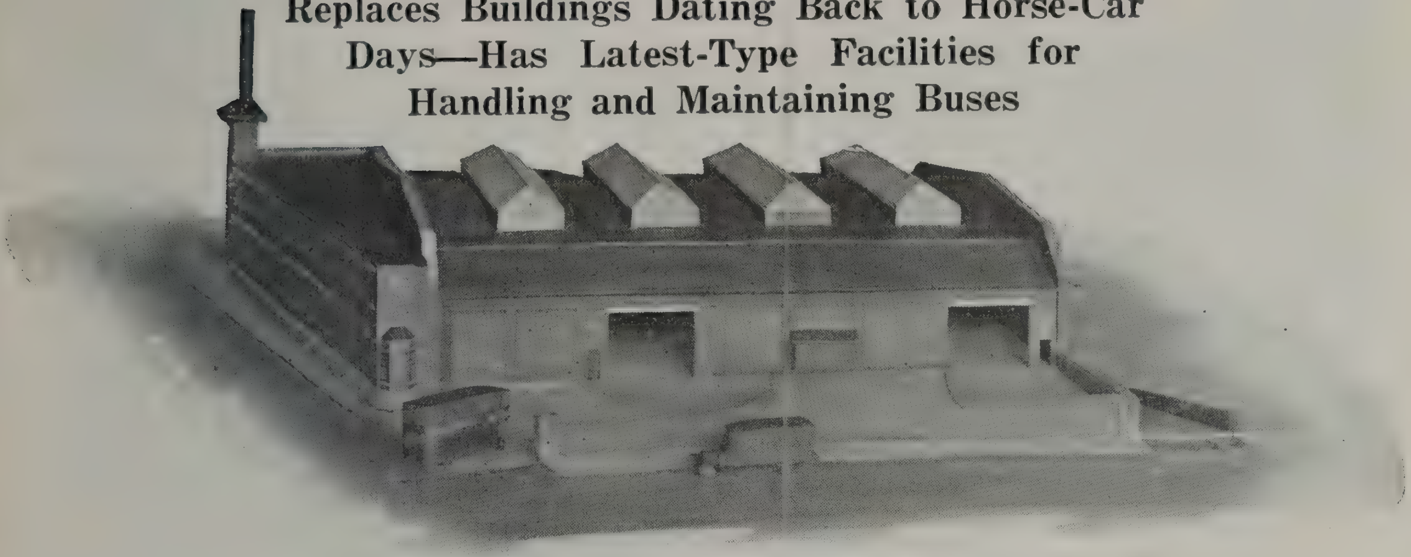
As was stated in the October issue of "Co-operation," complaints for discourtesy have been reduced six per cent over last year. This is encouraging. To reiterate further:

> It has been stated that if the riding habit of the population served could be increased to 365 rides a year per capita nearly seven and one-third million dollars of additional revenue would be secured.
>
> Did you ever stop to think how much of this could be secured if the entire organization was determined to sell our service by building up a reputation for courtesy at all times? Customers who appreciate that we attempt to serve them courteously will ride more frequently and get others to use a system where they are assured of courteous treatment and interest in their welfare.

Edward Dana

A 112-BUS GARAGE IN SOMERVILLE

Replaces Buildings Dating Back to Horse-Car Days—Has Latest-Type Facilities for Handling and Maintaining Buses



THE continued increase in the number of buses operated by the railway has made increased garage space necessary. As space in rented garages, even when obtainable in convenient locations, is not well suited to the handling of buses, it was decided to construct another garage, as centrally located as possible. After consideration of various available sites the company's property near Union Square, Somerville, was selected as a good location for a number of the present and anticipated lines.

ELECTRIC CARS HERE IN 1896

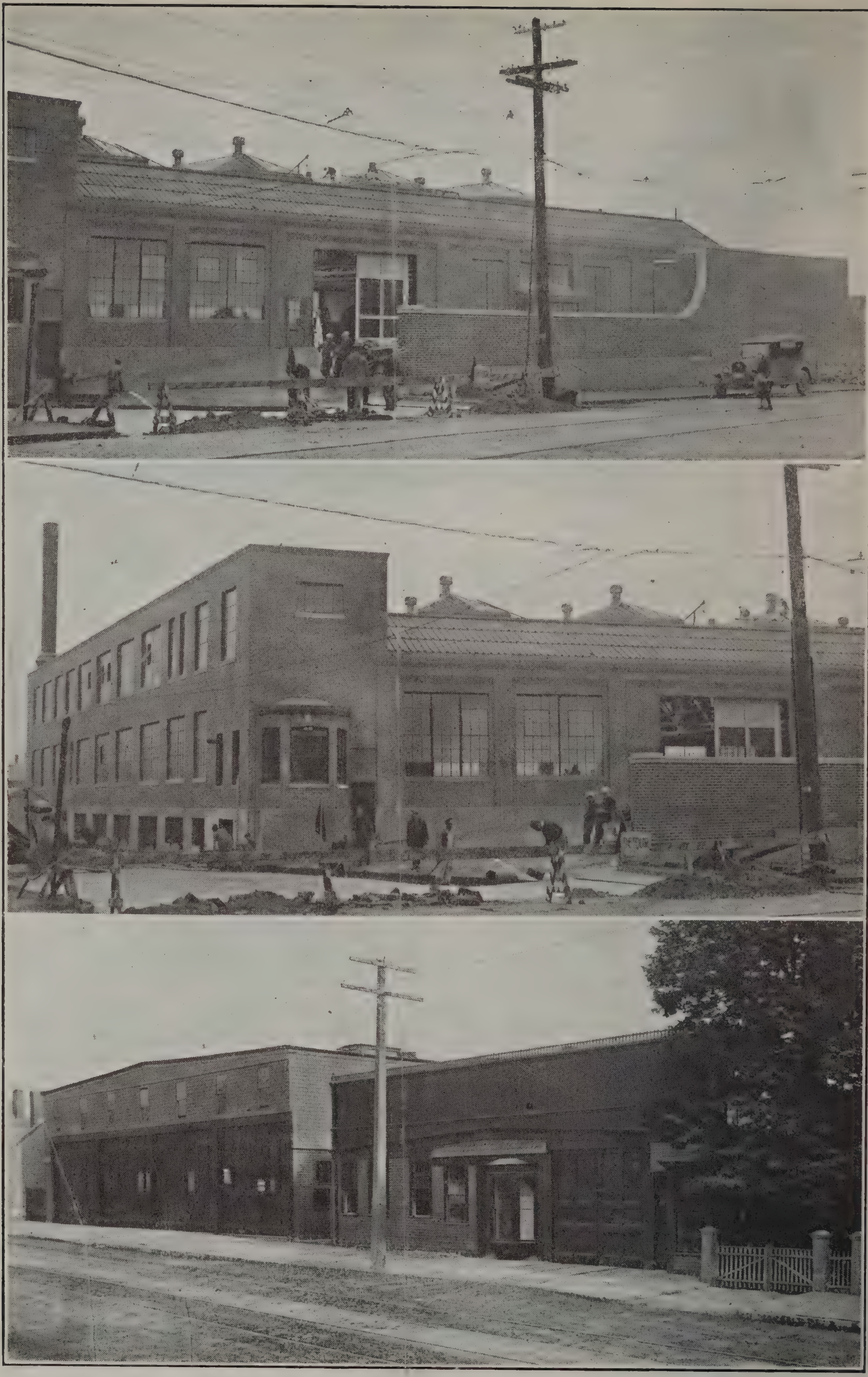
The land was occupied by an old carhouse and stable, originally built for the operation of a horse-car line from Scollay Square, Boston, to Union Square. These had been taken over by the West End Street Railway from the old Consolidated Railway. In 1896 electric cars were operated on this line, and as the old carhouse was too low for these cars, in 1897 the old stable building was remodeled for an electric carhouse, the offices, lobby, etc., remaining in the former carhouse. The use of this carhouse as an operating house was given up in 1903.

These premises were used, in whole or in part, by the road department for many years, the trackmaster's office of Division 4 being located there from 1913 to 1923, while the yard was used until April 5, 1926. The old buildings were torn down by the company in May and June, 1926, to clear the site for the new garage. Construction of the new garage was begun by the contractor, Simpson Bros. Corporation, on June 14, 1926, and completion is planned for Dec. 15. The garage is constructed of concrete, steel and brick, and consists of basement and first floor, each 141 feet x 144 feet, to house, in total, about 112 buses. In addition, there is an auxiliary building containing repair rooms, starter's office, receiver's office, lobbies and toilets for mechanics and bus operators.

The roof of the garage is of precast concrete slabs, red interlocking tile being used on the exposed slopes, the remainder being covered with tar and gravel.

FIRST FLOOR IS CLEAR SPAN

The basement floor has 11½ feet headroom, and is intended only for the storage of single-deck buses, the floor above being supported by columns spaced 32x48 feet. The



VIEWS AT SITE OF NEW SOMERVILLE GARAGE
Above and Center, New Garage from Washington Street. Below, Buildings Replaced by New Garage

first floor is a clear span, with 15 feet headroom under the trusses, to accommodate double-deck buses.

The floors are of concrete, steel troweled to a hard, smooth finish. Drains are placed in the floor for each 400 square feet, floors being pitched three inches.

Daylight is abundantly provided by windows and large skylights. The skylights will be glazed with a special actinic glass, to reduce glare. Electric lighting is provided overhead, with numerous extension-cord outlets on the walls. Water outlets for washing purposes are available on the walls at frequent intervals, no special washing equipment having been adopted as yet.

Special Attention Given Heating Equipment

The heating in the garage proper is by means of rotary-fan, unit heaters, while in the auxiliary building direct radiation is used. Steam is furnished from two high-pressure boilers located in the building. A track from the street runs into the yard, and ashes are loaded into cars by a mechanical conveyor, while coal is dumped direct from cars into a coal pocket.

For the repairing of buses, a special arrangement of drop floors gives the equivalent of three bus-repair units, the use of ordinary pits not being permitted in the Metropolitan District.

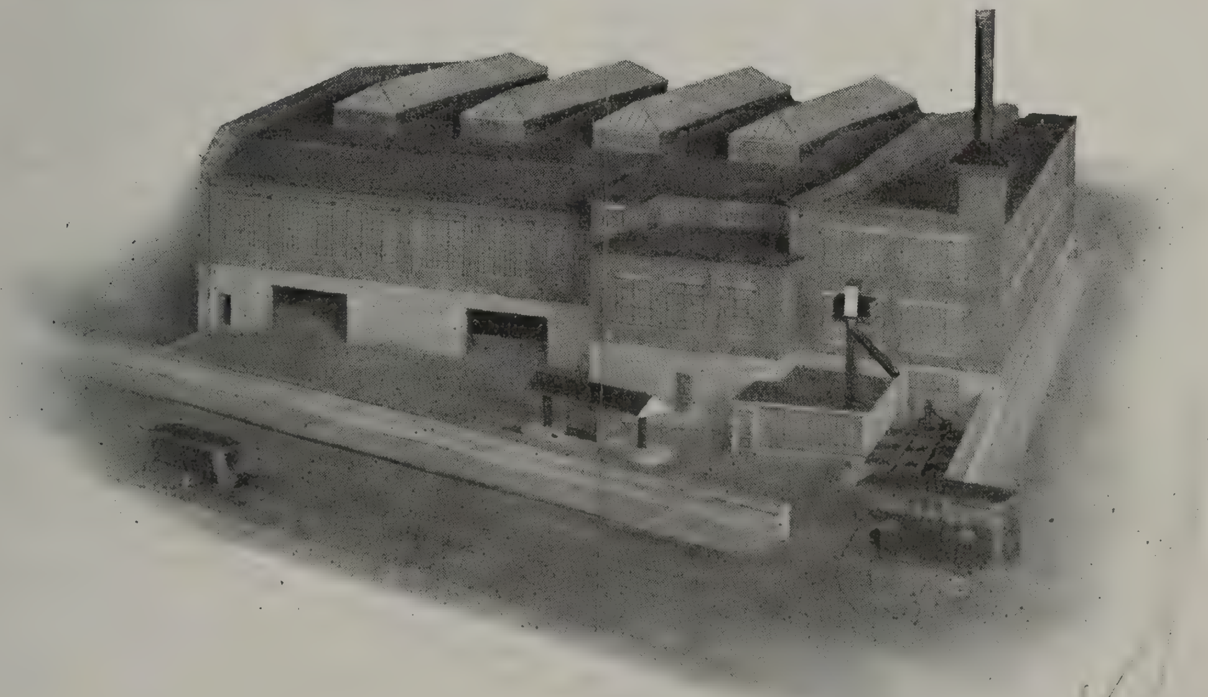
There is a yard at the front of the building on the upper level, and one in the rear on the basement level. Gasoline filling will be done outside of the building, a filling station being provided in each yard, each with two pumps, operated by air power or by hand. Lubricating oils are in tanks in an oil storage room in the basement, with pumps on both floors.

Liberal Maintenance Conveniences Provided

Motors will be removed from the buses for overhauling, and taken to the motor repair room by means of an overhead telpher beam, with electric hoist. This runs into the repair room, which is equipped with motor tables and benches. There is a battery charging room, as well as a room for the building of batteries.

Racks will be provided for the storage of tires, both inflated on wheels and deflated; and also special racks for holding tire chains. The stockroom will be equipped with the usual steel stockbins for storage of spare parts.

Revolving-type ventilators are



placed on the skylights, and 8x12-inch register faces, with movable louvers, are built into the outside walls at the floor level, for ventilation.

DOORS ELECTRICALLY OPERATED

The main entrance and exit doors are of the sliding type, operated by electric motors, with pushbutton control. The door openings are 20 feet wide, and on the first floor give 14½ feet headroom.

For fire protection, automatic sprinklers are installed, and fire extinguishers of various types will be provided.

In connection with the designing of this garage, the architectural drafting room constructed a model, on the scale of ⅛ inch to 1 foot. The accompanying cuts of this model give a good idea of the appearance of the completed garage. The views of the Washington Street front were taken as this article was in preparation.

COURTESY EXEMPLIFIED

A business man of Boston recently wrote the general manager regarding the following circumstances:

He arrived one morning at Harvard Square station and found that he had left all of his money and his keys at home in Watertown. He approached an employee and explained his difficulty. Without any suggestion on the man's part, the employee offered to loan him whatever money he needed and gave him a transfer to Boston. The patron borrowed $1 for emergency uses and was thus relieved from embarrassment. In his letter to Mr. Dana this gentleman wrote as follows:

"Such faith in human nature during these strenuous days is more than refreshing, and while this employee must be of value to you, judging from the number of service stripes on his sleeve, I believe that you should also know that, in my opinion, such actions will do more to create genuine good feeling towards your corporation than any advertising or outside solicitation you might employ.

"The whole affair was handled in such a courteous and quiet manner that I feel compelled to take this opportunity to express to you—and I trust that you will pass the same along to this employee—my intense appreciation for the relief afforded me from an embarrassing situation."

BOWLING RECORDS TO NOV. 20

BOSTON ELEVATED

	Won	Lost	Pinfall
Steel Construction	24	4	10029
R. S. and S.	23	5	9908
Repairmen	23	5	9747
Rapid Transit	22	6	9877
Division 2	20	8	9993
General Manager	17	11	8461
Sullivan Square	13	15	9676
Division 4	12	16	9520
Division 3	9	19	9267
Division 1	8	20	9727
Supervisors	8	20	8994
Receiving	7	21	9084
Claim	6	22	9193
S. B. Power	4	23	9065

MAINTENANCE DEPARTMENT (LENOX STREET)

	Won	Lost	P.C.
Division Two	15	5	.750
Service Cars	14	6	.700
Office	13	7	.650
Central	11	9	.550
Welders	10	10	.500
Foremen	8	12	.400
Equipment	7	13	.350
Truck Drivers	2	18	.100

MAINTENANCE DEPARTMENT (SULLIVAN SQUARE)

	Won	Lost	Pins
Sprague	21	15	11356
Butler	20	16	11430
Newman	20	16	11388
Thomas	19	17	11522
Perron	19	17	11255
Curtin	18	18	11481
Black	18	18	11433
Powers	18	18	10121
Kevill	15	21	11258
McCrystal	12	24	11285

CORPORATION

	Won	Lost	Pinfall
Queen Quality Shoe Co	14	6	7528
Boston Elevated Ry	13	7	7256
Hood Rubber Co	13	7	7249
Edison Elec. Ill. Co	13	7	7213
New Eng. Tel. & Tel. Co	12	8	7361
Monks & Johnson	11	9	6895
Wm. Filene's Sons Co	8	12	7126
American Mut. Liab. In. Co.	7	13	6917
United Shoe Mach. Corp	6	14	6981
Checker Taxi Co	3	17	6739

Your value is increased as the need of supervision is decreased. The man whose work constantly requires watching must, of course, help pay the watcher.—Exchange.

IS LIFE INSURANCE A GOOD INVESTMENT?*

Expert Analyzes the Subject from All Standpoints for the Benefit of Boston Elevated Railway Employees

On March 8, 1926, Mr. Franklin W. Ganse, manager of the Columbian National Life Insurance Company, was the speaker in the course in investing savings. He started by quoting from an earlier adress of his own the following:

"Investment only uses principal to produce interest; through insurance one uses interest to produce principal."

In other words, contrasted with other investments, life insurance is reversed, and it is difficult to compare it with other forms of investment, although it has some investment features.

In ordinary investment there is no compulsion toward saving, and it is in furnishing a degree of such compulsion that the co-operative banks are particularly helpful.

In life insurance there is, first, the compulsion feature in the payment of premiums; second, there is the protection which is furnished, and third, there is the investment phase which is now under discussion.

It is not fair to compare life insurance with other investments as an investment unless due allowance is made for the feature of protection. The theory of life insurance is that with an aggregation of policyholders paying premiums regularly a certain number will die within a given period, this number being known with considerable accuracy. When some policyholders die the others contribute the amounts paid to their families. All of the policyholders provide the protection for each.

That the value of life insurance as investment and protection is apreciated in this country is shown by the fact that half of the population are policyholders, the total insurance carried being $66,000,000,000. For every man, woman and child in the country $100 premium is being paid each year. This covers five-sixths of all the life insurance in the world.

For a young man the best form of insurance is straight life insurance, which has little investment value, although the policy has cash value. If he wishes to combine investment with protection he can take out an endowment policy. This gives him protection and a sum of money at the end of a stated term of years. If he has reasonable expectation of a substantial increase in assets or income at an early date he can use term insurance to good advantage.

One kind of policy which Mr. Ganse recommended is continuous installment endowment insurance. This provides protection and after a term of years it provides a stated income for life of man and wife with a guaranteed minimum of payments.

SOME OF MR. GANSE'S ANSWERS TO QUESTIONS

Mr. Ganse's address was followed by numerous questions which brought out supplementary information. Some of these with the substance of the answers follow:

QUESTION. What is the rate for a 20-year endowment policy for a man of 50?

ANSWER. About $50 a thousand. In other words at the end of 20 years you get out just about what you have paid.

QUESTION. Can a man get term insurance for more than ten years?

ANSWER. Yes, for 20 years and sometimes more, but a term insurance policy should be converted religiously.

QUESTION. Is there any real difference between state insurance policies and those of commercial companies?

ANSWER. State insurance is somewhat lower because the state furnishes some facilities which are not charged against the insurance.

QUESTION. How about the annuity business?

ANSWER. An annuity is the life insurance policy turned round. There is no limit of age for annuity. The older the annuitant the better. The annuity works out especially well for a bachelor or widower without children. All of the large companies take annuity business.

QUESTION. Can one person take out an annuity on another person and draw an income as long as that person lives?

ANSWER. Yes.

QUESTION. Can one party insure the life of another and collect on the policy at maturity or on the death of the insured persons?

ANSWER. Yes, but if this is done for speculation the insurance companies are very careful in issuing such a policy. In the case of husband or wife it is all right.

QUESTION. Can you use life insurance as collateral?

ANSWER. Yes, this is being done more and more all the time. Anything that has cash value is good as security. Sometimes very large loans are made in connection with insurance policies. However, the life insurance policy is good for collateral only when the leader is willing to assume if the insured person lives he will pay the loan or else to the extent only of the cash value.

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*Third in a series of addresses in the course in investing savings, L. J. Dickey, chairman.

QUESTION. Can loans on policies be secured when beneficiaries are named in them?

ANSWER. Yes, with the consent of the beneficiary, or by temporarily making the policy payable to one's estate, if the right to change beneficiary has been reserved.

QUESTION. What about group insurance?

ANSWER. This is a development by which a large group is insured together, and is becoming more and more popular. It can usually be placed without examination, which Massachusetts, one of the most conservative insurance states, does not permit for regular individual policies.

QUESTION. Would you advise a man traveling most of the time to take out accident policies?

ANSWER. Yes, and I prefer a policy in a company which has money in the treasury rather than one which has to pass the hat after an accident occurs.

MR. LINDALL ON "HABIT OF MIND"

At the first group conference of the rolling-stock and shops department, its superintendent, John Lindall, spoke briefly on the above topic. The following from his talk is worth pondering:

"To illustrate what I mean by 'habit of mind' I am going to give you a brief synopsis of a story which I read recently. The story was about a poor boy who was afflicted with a drunken father and a step-mother who had no love and no use for the boy. He stood it as long as he could and then ran away from home. He experienced great hardships, but by tramping and stealing rides on freight trains he finally arrived in the cattle country in the far West, where he obtained employment on a cattle ranch, where he grew up to be a very successful cattle and land owner.

"The story opens with a description of a country school in the boy's home town on a day when the school committee called to see what results the teacher was getting in her work. The committee was composed of a farmer, a doctor and a grocer. There was some discussion as to what subjects the pupils should be examined in, but they finally agreed with the grocer that arithmetic was the most important subject, and they requested the teacher to conduct an examination in mental arithmetic. The teacher instructed the class that she would state the problems and then call on different scholars to give the answers. One problem was, 'If a farmer had fifty-seven cows and lost twelve of them how many would he have left?' The teacher called on James Millburn, the principal character in the story, to give the answer. Jimmie stood and hesitated for a moment; then he said, 'The answer is forty-five, but if you will excuse me, teacher, I do not think that it is a proper example. No one should ever lose twelve cows.' The committee agreed that Jimmie was right. That seemed to be his habit of mind and that characteristic was dominant throughout his career. He was determined that things should not be lost if he could help it. He had not been at the ranch very long when one day he was left to look after a lot of grazing horses. The horse that he was riding was frightened by a rattlesnake. The boy had heard the cowboys tell of snapping the head off a rattlesnake and thought he could do the same thing, but evidently the snake had more experience in that line than the boy, and he struck the boy in the arm. The arm immediately began to pain and to swell. The boy knew that he was very seriously injured, but he managed to mount his horse and round up the remainder, and drive them several miles to the home ranch before he lost consciousness. Not a horse was lost, which was the important thing in his mind.

"In our business we have nothing to do with horses or cattle, but we do have to do with time and materials, and these can be lost or wasted fully as easily as horses or cattle. To prevent such loss we must have the proper habit of mind.

"It is necessary to know how to do things properly, but that knowledge will not get us very far unless we are alert and determined to apply the knowledge wherever it is possible. These meetings, as well as being instructive, should help to develop that habit of mind."

The law of worthy life is fundamentally the law of strife; it is only through labor and painful effort, by grim energy and resolute courage, that we move on to better things—Theodore Roosevelt.

CHILDREN PLAYING IN STREET—AN ACCIDENT HAZARD

In the examination held in June, 1926, to select train, car and bus operators to attend the National Safety Congress this year at Detroit, the following question was asked: "How should you operate your car if you see children playing in the street near the tracks as your car approached, and why should you so operate it?" Many good answers were made, showing that the particular accident hazard is understood, as follows:

"Always slow down when nearing children on or near tracks, as they are liable to run in front of car when so playing."

"Slow down to a walking speed, sounding gong all the time until you see that they are a safe distance from your car; then go by them slowly."

"Car should be operated slowly where children are playing, as they don't know the danger of approaching car. They also move very quickly when playing, which requires driver to move slowly in order to save them."

"With my car under control, sounding my gong and being absolutely sure that none of them would be confused and likely to run in front or against the side of my car."

"Slow down speed, sounding gong to warn the children of the approaching car, having same under perfect control so as to be ready for any mismove the children might make."

"Very slowly, being prepared for a quick stop, also sounding gong, as children are very thoughtless while playing and might dart in front of car without an instant's notice."

"Start ringing my going, check speed of car at once, bringing it down to such speed that I would have perfect control of it and proceed still ringing my gong. I always try to make the children look at me if possible, so then I may know they see me."

"Very carefully and at a reduced rate of speed because children are very heedless and at any moment are liable to run in front of car."

"You should operate your car carefully, sound the gong and have car under perfect control so as to be ready for an instant's stop in case one should suddenly run in front of car."

"Slow down almost to a stop and ring the gong, because young children are not to be trusted to take care of themselves. If they are close to the tracks I would drive them to the sidewalk."

"With extreme care, having speed reduced so that I could stop almost immediately, because children playing are likely to chase each other and, not noticing the approach of the car, may run directly across in front of the car."

"Drive car very slowly so that in case a child makes a false move you can stop car at once. If the child is too small, stop car and put child on a safety place to be sure he won't get hurt and keep gong sounding steadily."

"When I am running along a street where children are playing, either on the sidewalk or in the street, I shut down and constantly ring my gong watching, as far as possible, the movements of every child until I am by them."

"Seeing children on the street or near the track, the speed of car should be reduced, the gong sounded; if that doesn't call the attention of the children, be ready to stop car in case they change their minds."

"Bring car under immediate control, slow enough to stop instantly; ring your gong to warn them because children make so many unexpected movements which would bring them in front of or under car."

"Be ready for instant stop, sounding gong."

"I should have car under perfect control and be able to stop immediately and warn them of the danger of playing in the street and, if possible, report the matter to some responsible person."

"Slow my car down to such speed that I can stop at any moment if one of them should dart in front of car."

"Take due care; run slow; ring your gong so they may know that a street car is approaching."

"Immediately bring car under control, sounding gong. If possible, warn them of danger and ask them to go to sidewalk."

"Drive very slowly; sound my gong and have my car under perfect control so I can stop very quickly to avoid any trouble or accident of any kind."

"Operate car at such a rate of speed that I should be able to stop immediately. I should ring my gong to let children know car was coming and to be careful."

Safety is cheap at any price, but it costs only a thought.—*Pacific Electric Magazine.*

KEEPING "EL" ARMATURES IN REPAIR*

By OSCAR WEDERBRAND
Foreman, Armature Shop, Boston Elevated Railway

When armatures are received in the shop for repairs they are first examined by the armature winders for possible defects in winding. If the windings are not defective the armatures are cleaned with compressed air and a ground test of 1200 volts is applied. The armatures are also tested for short-circuits in the winding. If found to be all right, they are sent to the baking oven to be heated over night and dipped in insulating varnish while hot.

After draining, armatures are returned to the baking oven for 24 to 50 hours' baking, according to the size, at a temperature of about 235 degrees Fahrenheit. After baking they are taken to the binding lathes for replacement of bands, if needed. All rewound armatures are banded while hot.

Shafts also are checked up, and if journals are worn more than 0.0025 inch under standard size, they are turned down to fit special brasses. If the pinion fits or keyways are worn, they are built up by electric arc welding and machined to standard size. Commutators are turned down and the edges of commutators are rounded to minimize possibility of flashing. The mica between segments is undercut about 1/32 inch deep.

Armatures are then given a final test for short-circuit and ground, repaired armatures are given 1200 volts ground test, and rewound armatures 2000 volts. After this the armatures are painted and sent to the shipper for distribution to carhouses.

In 1925, 4176 railway armatures, an average of eighty per week, were received at the shop, of which 2974 were repaired and 1202 rewound.

All commutators used on surface and compressor armatures are manufactured in the armature shop. The "V's" of the copper and mica segments are accurately machined, gaged and shellacked to insure a good fit of the metal and mica "V-rings." The commutators are heated to 115 degrees C., and while hot are put under pressure of from ten to twenty tons, depending on the size, and "V-ring" nuts or bolts are tightened to retain the pressure, after which commutator is turned to proper over-all dimensions, and tested with 200 volts for short-circuits between segments and 2000 volts for ground. All our field coils are impregnated by the vacuum high-pressure process, using a high-grade, moisture proof, heat-resisting insulating compound. All field coils are tested for short-circuits in the winding before and after impregnation. In 1925, 6650 field coils were received at the armature shop for repairs, out of which 995 had to be completely rewound.

About 90 per cent of the armature coils used for rewinding are made in the shop. Coils are heated and dipped in insulating varnish. Extra reinforcing pieces of insulating material are inserted where needed. A total of 46,637 railway and compressor coils were made in 1925.

The material required to make these coils was as follows:

53,774	lbs. copper wire.
2,123	lbs. varnished cambric tape.
2,156	yards ¾-inch linen tape.
280	lbs. ¾-inch mica tape.
1,815	gals. black coil varnish.

In 1925, 635 railway surface motors were overhauled in the shop. When motors are overhauled all armatures and field coils are removed and replaced with new. Housings and axle bearings are checked up and, if worn, are welded up with electric arc welder, and rebored to standard size. The housing fit in the motors is checked up and, if worn, motors are welded or rebored for oversize housings. New motor leads are put in and new or repaired brush holders are installed. Motors are painted inside with insulating paint before and after the field coils are installed, and when finished are given a short running test.

All controllers, reversers, contactor boxes and circuit breakers are stripped down, all coils tested for ground and short-circuit, arc chutes are overhauled and contacts renewed if needed. Magnet valves are checked up and new seats ground in and valve-stems replaced if required. After contactor boxes are rebuilt they are tested by the electrical engineering department before shipping.

Heater coils, when sent to the shop, are all rewired with new springs of correct resistance. Heater regulators are being overhauled and new eliminators installed to take the place of the old-style relay. Contact tips are replaced and regulators are tested for cutting in and out as in operation on a car.

All grid resistances sent to shop for repairs are stripped down and castings are carefully ground for good contact. Tie-rods are insulated with mica tubes, and mica washers are used between castings. Grid resistances, after being repaired, are given a 2000-volt ground test.

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*Abstract of paper read at first group conference, department of rolling-stock and shops, November 3, 1926.

MAINTENANCE COST LOW WITH MODERN-TYPE CARS

Marked economy in maintenance costs has accompanied the introduction of modern types of cars on this property. The evolution of car types on the Boston Elevated Railway was explained by figures and pictures on page 133 of the October "Co-operation." Data compiled by the department of rolling-stock and shops indicate what the result has been in the way of maintenance cost. Between 1920 and 1925, in spite of the substantial increases in labor cost the maintenance cost for surface cars per one hundred-ton miles has been reduced from 24.4 cents to 20.8 cents of nearly 15 per cent.

During 1926 there has been an increase in cost due to the following items:

An increase in schedule rates for all craftsmen and foremen of craftsmen, probably averaging 10 per cent, practically all of which is charged to maintenance of equipment.

To date 250 more cars have been put through the Everett shops than for the same period a year ago.

A larger number of special jobs than usual have been put through the shops, such as installation of wood seat cushions and backs in elevated and Cambridge subway cars, of new hand straps in elevated and surface cars, of new-type signs in No. 5 semi-convertible cars, of a stop-light system on semi-convertible cars, of electric tail lights on elevated cars, etc.

Graphs have been plotted and are reproduced below to show the effect of introducing modern cars, together with improvements in maintenance practice, as reflected in car and motor defects reduced to a unit basis.

"BREEZIN' ALONG"

The Boston Elevated Musical Club will present its annual musical comedy, "Breezin' Along," by Gene McDonald, at Symphony Hall, Wednesday and Thursday evenings, Dec. 15 and 16, 1926.

Tickets may be secured at surface-line division offices, from Messrs. O'Neil and Timmons of the rapid-transit lines, from Messrs. Wallace and White at the central power station, and from the following at the Park Square Building: Misses Navan, Flynn and Kenney, auditor's office; Messrs. McLean and Kelly, auditor's office, and Miss Sullivan, receiving department.

The club hopes that this show will be as well liked as its two predecessors. The members are having an enjoyable time and invite employees generally to join their number.

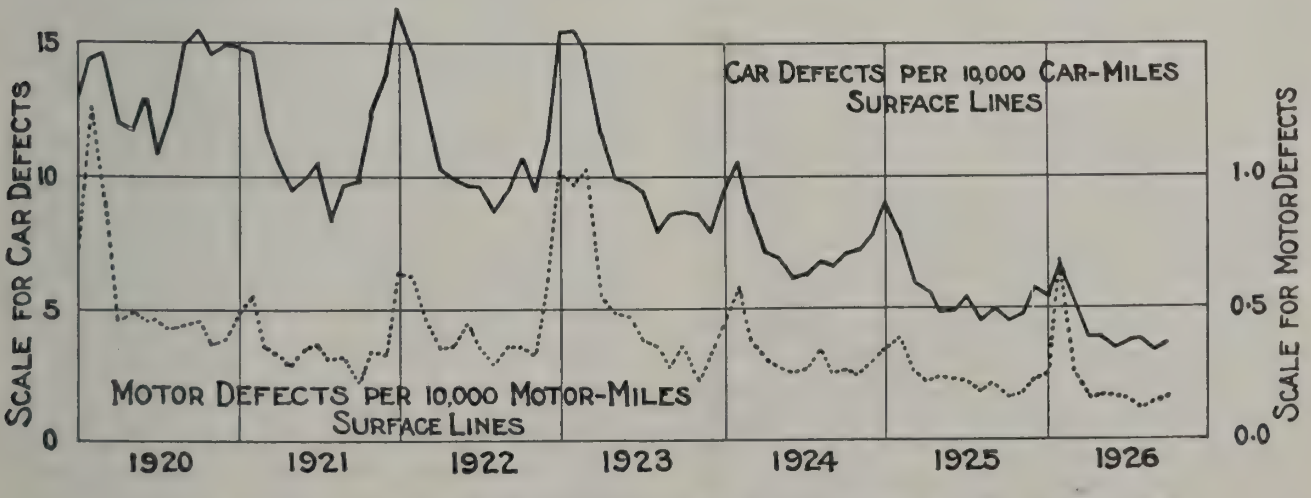
EMPLOYEES PENSIONED DURING OCTOBER

NAME AND OCCUPATION	YEARS OF SERVICE
Patrick Harrington, carhouse repairman	37
Edward Montgomery, clerk, Everett	28
Everett P. Coughlin, station receiver	35
John F. Murphy, watchman	38
Thomas W. Cook, motorman	28
G. F. Gillis, motorman	25
P. Carney, gateman	21
H. J. Griffin, clerk, truck shop	26

PENSIONERS WHO DIED DURING OCTOBER

W. H. Brown, motorman.

G. H. Harney, repairman North Point carhouse.



NEW CARS AND NEW MAINTENANCE EQUIPMENT AND METHODS RESULT IN FEWER DEFECTS

YOU AND YOUR CAR

In the Preceding Two Issues of "Co-operation" Appeared Articles Under the Above Caption, Issued by the National Safety Council—Below Are Given Some Good Tips on Brakes

The brakes should be tested each day. Before going half a block from the garage make a service test by throwing out the clutch and applying the brakes. If possible, select a dry spot for making this test. Under no circumstances should the car be taken farther if the brakes are not operating properly; drive back to the garage and see that the faults are corrected before driving out again.

To keep the brakes in good condition:

a. Once in two months remove the rear wheels and wash the brake lining in kerosene. This removes all oil and grease which, if present, take the "bite" out of the brakes. Never oil brake lining.

b. Brakes squeal when they are glazed or when improperly adjusted. Squealing can often be stopped by removing wheels and roughening the brake lining with a stiff brush.

c. If the brake lining is worn down to the rivets, sink the rivets still farther or have the brakes relined.

d. Wipe off and oil the brake mechanism every 500 miles, or oftener.

e. Make regular systematic brake inspection a habit. The loss of a cotter pin might lead to a serious accident. When a lock washer is removed, don't put it back; use a new one.

Many cars skid, not only because of slippery streets, but also because of unequal division of braking power. Jack up rear wheels and apply brake far enough so that it is just possible to turn one wheel by hand. Adjust brake on the other wheel so the same amount of energy is required to turn that wheel by hand. Test for unequal braking power at least once a month.

Do you always apply your brake properly?

a. When coming to a stop on a straight-away, shut off the gasoline throttle and leave the clutch engaged until just before you come to a stop; this method of stopping is especially advisable in wet weather because it lessens the tendency of the car to skid. It also helps to distribute the braking power equally, and assists the action of the brakes. Do not shut off the ignition until after you have stopped; it may be necessary to make a quick start.

b. In going down an ordinary hill, leave the clutch engaged and close the gasoline throttle. This helps cool the engine and also makes it unnecessary to use the brakes.

c. In going down steep hills, or when descending ordinary hills with a heavy load, put the gears in intermediate or low speed at the top of the hill and leave the clutch engaged. Shut off the gasoline throttle.

d. In making an emergency stop, leave the clutch engaged, apply the foot brake and pull the hand brake; but do not "lock the wheels." Keep the wheels rolling; otherwise there is danger that the car may slide or skid.

e. When applying brakes never lock the wheels. If wheels are locked, not only does it increase the liability of the car to skid, but it is extremely hard on tires.

A CREDITABLE RECORD

The Metropolitan Mutual Aid Association has transacted a successful business for forty-three years, during which time $1,541,237.64 has been distributed to members on account of sickness and death claims.

The Association comprises more than 3,500 members and assets of over $150,000 are available at once to pay sick and death benefits.

The public trustees of the Boston Elevated Railway, recognizing the vast amount of value this Association is to their employees, contribute $3,300 per annum and the use of a hall for the weekly meetings. With this assistance and the interest on funds and bank deposits the association is able to give the members insurance at less than cost.

The officers and directors of the Association would like to receive applications from employees, and feel that such applicants will never feel sorry for protecting themselves and their dependents in this thrifty Association. A letter addressed to Metropolitan Mutual Aid Association, 2503 Washington Street, Roxbury, Mass., will bring an application blank and full information regarding this Association.

Friend—"Why is it that your son rides in a car, and you always go on a street car?"

Father—"Well, he has a rich father and I haven't."—Exchange.

MR. DANA'S RADIO TALK*

Twenty Prizes Offered for Verses on Being Careful and Preventing Accidents on the Highway—Fewer Children Struck by Cars Last Year

To Members of the Big Brother Club:

It is now over a year since I had the honor of talking to the members of your club.

When Big Brother called up I knew that he wanted me to talk to you again, and I was only too glad to do so. In fact, if he had not called me I should have had a feeling that there was something incomplete about my life this fall. I should have missed the comradeship which comes from talking over the radio to such a big group of boys and girls.

During the month of September I had my first vacation in several years, and I mention the fact because I want to tell you where I went, because it has something to do with your Big Brother Club.

I went by steamer from New York to St. Johns, Newfoundland—a distance of nearly 1700 miles along the coast of the New England states and Nova Scotia.

It was a wonderful trip, with fine weather, but what I want you to know is that I enjoyed the silent companionship of the many lighthouses and lightships that dot our rugged coastline.

Day in and day out passing vessels search for these beacons with anxious eyes, and when the night is dark or foggy and the beams of these beacons are observed by those on board it is almost like seeing the home fires burning, it gives such a sense of security and comradeship.

I was quite delighted, therefore, to hear Big Brother reading letters from many of these loyal keepers when I tuned in the other evening.

Certainly if the radio brings comfort and pleasure to anyone it must do so to those on board these lightships or out on far-away points of land in a lighthouse.

These letters will give radio listeners a true insight into the value of the lighthouse service, and the loyalty to the public service which surrounds it.

I must mention safety again because, as I said last year, you never can hear too much about the need for being CAREFUL. Each year the ever-increasing congestion and movement of vehicles on the highways demand an ever-increasing vigilance on the part of all of us to be CAREFUL and to help others to be careful.

Last year I asked you, as you began the school year, to step up to the conductor or motorman and tell him that you were going to help avoid accidents during the year.

Many of you did so, and I am happy to say that as far as the Boston Elevated was concerned we have had only 59 instances during the last twelve months of children under 14 years of age injured, stealing rides or struck by cars, as compared with 85 for the corresponding year previous.

The attention of the whole country has been, and is now, directed to the need for being careful. Hundreds of men and many organizations are devoting their entire time to this work, trying to have their fellow citizens "Stop, Look and Listen!"

Many people today have difficulty in appreciating the great dangers which exist in the world of movement because when they were your age conditions were different and nobody talked safety and avoiding carelessness day in and day out as they do to you nowadays.

What we all want to do is to work so hard and to preach so loud for safety and avoiding carelessness that the little children of today will not have such a difficult time learning of the great need for being careful and, consequently, will be happy and free from the terrible sadness which surrounds accidents of whatever description.

I am going to repeat what I said last year as regards the street car dangers:

First—Never ride on the outside of a car. That is not the place to ride, and you are inviting serious accident, or possibly running the chance of being killed.

Second—Always look both ways and never run across street car tracks if a car is near. There is plenty of time to cross when cars are not near.

Third—Do not play in the streets where street cars are operated because you may become so interested in your play that you forget all about being careful.

Fourth—When you ride on the cars never get on and off when the car is in motion, and be sure that it is safe to get on or off before you do so.

Now let us all work diligently to make this school year free from sad accidents. You can do it if you put your mind on the subject and join the great army of crusaders against carelessness.

(*Continued on page* 151)

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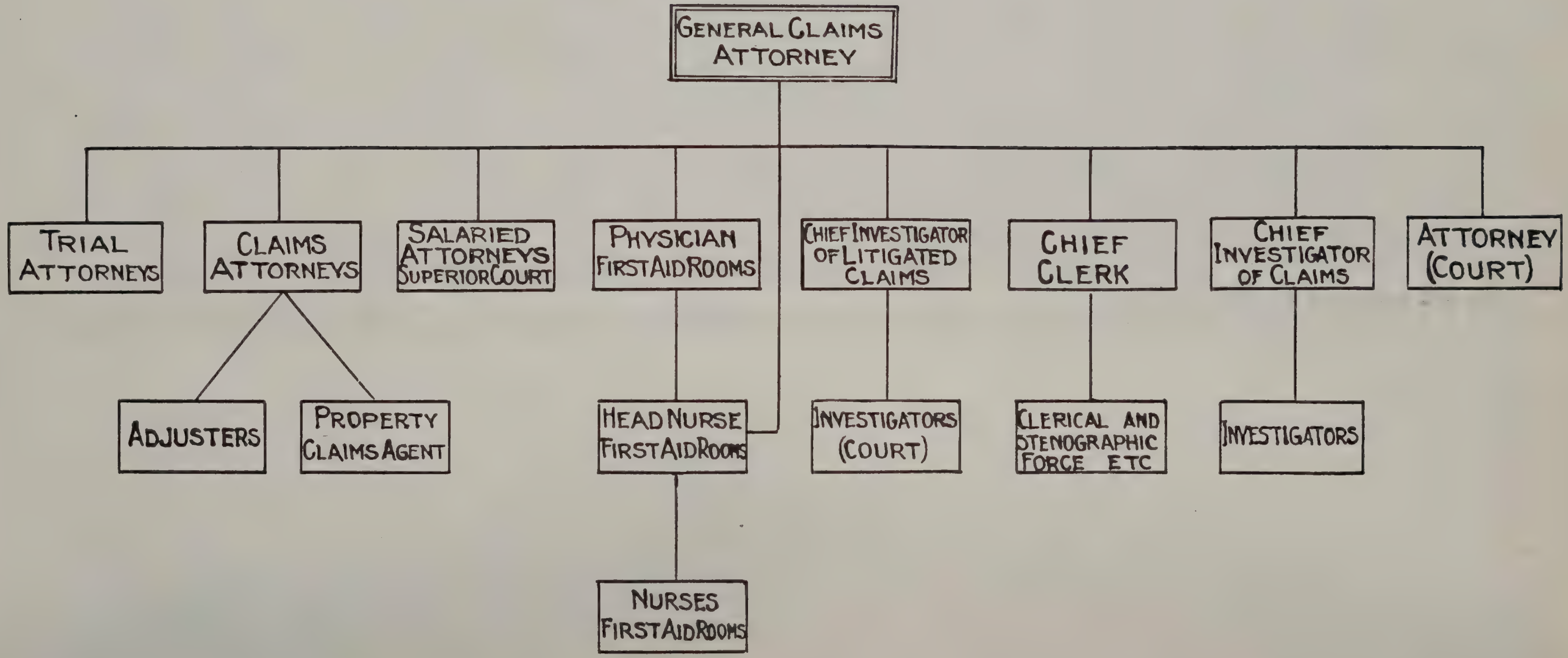
*This address was delivered on Oct. 22, 1926.


GENERAL CLAIMS ATTORNEY
TRIAL ATTORNEYS
CLAIMS ATTORNEYS
SALARIED ATTORNEYS SUPERIOR COURT
PHYSICIAN FIRST AID ROOMS
CHIEF INVESTIGATOR OF LITIGATED CLAIMS
CHIEF CLERK
CHIEF INVESTIGATOR OF CLAIMS
ATTORNEY (COURT)
ADJUSTERS
PROPERTY CLAIMS AGENT
HEAD NURSE FIRST AID ROOMS
INVESTIGATORS (COURT)
CLERICAL AND STENOGRAPHIC FORCE ETC
INVESTIGATORS
NURSES FIRST AID ROOMS

This is the sixth in a series of charts showing the organization of the Boston Elevated Railway. The following charts have been issued previously: December, 1925, general organization; February, 1926, transportation department; May, 1926, maintenance department; June, 1926, power department; September, 1926, rolling-stock and shops department.

Fifteen years ago Helen Cecelia Murphy wrote a prize poem on safety for the Boston Elevated Railway, entitled

"Stop—Look—Listen—Ponder"

and I am going to read that to you. She may have some little children growing up today, and if so I am very sure she has taught them the full realization of the meaning of being careful, and this is the poem:

Stop—Look—Listen—Ponder

Stop—little pink-cheeked maid, listen for a car that's coming.
Never try to cross a street until you know the way is clear.
  Never mind the school bell ringing,
  Caution to the winds a-flinging.
Better far to count you late than have it toll your closed career.

Look—little blue-eyed boy, home you have a mother waiting.
Don't increase her heavy burden—turn her greatest joy to pain.
  In her heart a love is burning.
  Only you can calm her yearning.
Such a love that but the tender heart of mother can contain.

Listen—children, you should know, in the onward march of science,
Though speed and power are mighty factors, safety should be on the throne.
  Every second gained in passing,
  Though it tend to wealth's amassing,
Should be filled with cautious action—never recklessness condone.

Ponder—playful, careless youth, to your keeping God has given,
To unravel to its end, the wondrous skein that binds a soul.
  There's a duty on you binding:
  On that trust depends your finding
Here below the chance to caution—better far than to console.

If you wish us to do so we will be glad to offer to members of the Big Brother Club twenty $5 gold pieces as prizes in a 1926 competition for the best poem on being careful and preventing accidents on the highway.

Good Night, Children.

SAFE OPERATION REWARDED

The Chicago Motor Coach Company recently entertained at dinner at the Auditorium Hotel the nine hundred drivers of its buses who had operated their machines for nine months without a single accident.

SOME NOTED VISITORS

There is in the rapid-transit department office a visitors' register which has been maintained for nearly twenty-five years. Visitors from fourteen countries have registered, German and Japanese transportation men in the majority.

The register opens with the name of George Gibbs, representing the Interborough Rapid Transit Company and Pennsylvania Railroad Terminal. Mr. Gibbs is still an outstanding figure in the field of railway electrification, and head of the firm of Gibbs & Hill. Next comes John W. Converse, the famous president of the Baldwin Locomotive Works. Among the names one notices also the following:

Baron R. De Rothschild, France.

John A. Beeler, at the time general manager Denver Tramway.

Sir David Barbour, Lord Ribblesdale, Sir John D. Poynder, Sir Francis Hopwood, Sir George Bartley and other members of the Royal Commission on London Traffic.

Marcel Deprez, of the Metropolitan Railway of Paris.

John B. Parsons, president Philadelphia Rapid Transit Company.

Yashio Shinjo, electrical engineer Tokio Street Railway.

A. L. C. Fell, London County Council Tramways.

Harro Harrsen, general manager Mexico Tramways.

E. Gerard, of the Danish State Railways.

J. Van Vleck, famous power-station designer.

Alfred Törpisch, of the Prussian State Railways.

James Dalrymple, general manager Corporation Tramways, Glasgow, Scotland.

F. M. Brinckershoff, New York City.

H. Hirose, elctrical engineer Municipal Railway, Kobe, Japan.

P. Wittig, director of the Berlin Underground Railway.

W. A. Gordon Douglas, engineer mechanical department, Government Railways, Sydney, Australia.

F. C. Lamp, Prussian State Railways.

C. J. Spencer, manager Underground Railways, London, England.

T. Tompson, Buenos Ayres Street Railway.

M. N. Oyamanda, manager traffic department, Tokio, Japan.

Wm. Hutchinson, chief engineer Government Railways and Aramways, Sydney, Australia.

H. F. Lansdowne, traffic superintendent, London Omnibus Company, London, England.

H. Von Schulthess, Swiss financier.

Dr. Hans Robinsohn, engineer, Hamburg, Germany.

H. G. Carter, electrical engineer, Sydney, Australia.

J. M. McElroy, manager Manchester Corporation Tramways, Manchester, England.

J. J. L. Bradfield, chief engineer Sydney Harbor Bridge, Sydney, Australia.

K. Kishimoto, traffic manager Government Railways of Japan.

Ditlef Hald, engineer Norway State Railways.

Hisato Takekawa, Municipal Railway Bureau, Tokio, Japan.

Emil Pavel, Underground Railways, Berlin.

CHANGES IN THE RESERVE FUND

Fiscal Year 1925-26

July 1, 1925, $1,000,000

July	$249,477.93*	Jan.	$223,301.90†
Aug.	367,593.94*	Feb.	185,989.63*
Sept.	176,763.97*	Mar.	161,772.65†
Oct.	117,703.96†	April	77,031.69†
Nov.	45,265.00†	May	57,010.06†
Dec.	289,347.71†	June	1,662.18*

Profit and loss credit.....$32,359.07

Fiscal Year 1926-27

July 1, 1926, $1,000,000

July	$393,028.41*
Aug.	451,546.79*
Sept.	236,543.80*
Oct.	2,723,19†

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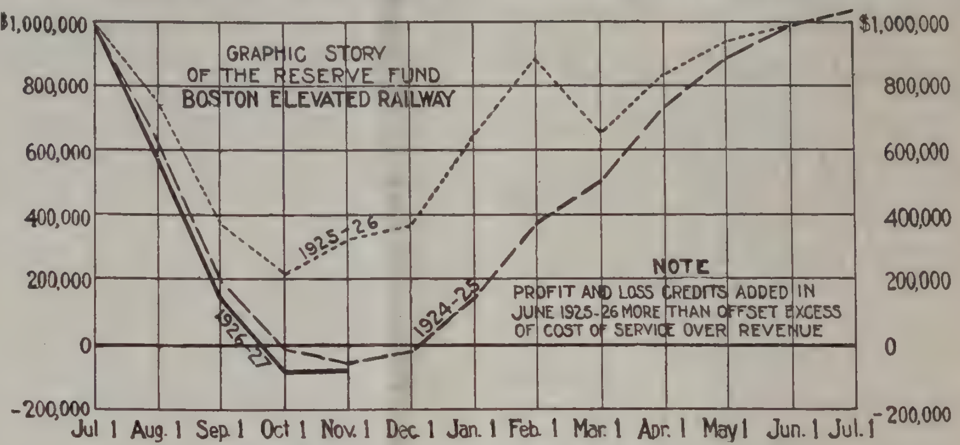
†Excess of revenue over cost of service.

*Excess of cost of service over revenue



OCTOBER OPERATION

GENERAL FINANCIAL DATA	1926	1925
Revenue exceeded cost of service	$2,723.19	$117,703.96
Operating revenue per car-hour (A. E. R. A. std.)	$5.97	$6.16
Operating revenue per car-mile operated	61.27c	64.19c
Average fare per revenue passenger	9.263c	9.279c
Ratio operating expense to operating revenue	73.07%	70.09%
PASSENGERS CARRIED		
Revenue passengers	31,423,943	31,890,185
Per cent 5c and 6c passengers	17.83%	17.42%
Revenue passengers per car-mile operated	6.412	6.786
OPERATING FACTS		
Trips operated	632,476	610,652
Car-miles operated:		
Rapid-transit lines	1,331,228	1,280,298
Surface, two-man	1,882,450	2,021,196
Surface, one-man	1,230,722	1,118,872
Express, newspaper and sprinkler cars	1,306	8,297
Motor bus	455,376	270,511
Total miles operated	4,901,082	4,699,174
ACCIDENT DATA		
Accidents per 10,000 car-miles	2.27*	2.33*
Accidents per 10,000 bus-miles	4.67	6.28
Revenue passengers carried per accident	25,652	26,465
Average number of witnesses per accident	3.26	2.97
COMPLAINTS AND DEFECTS		
Complaints in regard to car service	10	25
Employees complained of by car riders	99	116
Car defects reported per 10,000 car-miles	3.7	4.5
INFORMATION ABOUT POWER		
D.c. kw.-hr. output gross per month	18,665,390	19,129,435
Maximum kw. load	69,020	69,060
Tons of coal consumed	17,114	16,825
Lbs. of coal burned per d.c. kw.-hr. at cars	2.060	1.976
Operating and maintenance cost of power, including depreciation:		
Per d.c. kw.-hr. for car service	1.10c	1.05c
Per revenue car-mile	4.22c	4.19c
Kw.-hr. per revenue car-mile	3.843	3.998

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*This does not include miscellaneous accidents.

November 20, 1926.

EDWARD DANA, *General Manager.*

BOSTON ELEVATED RAILWAY

CO-OPERATION

Volume 5 DECEMBER, 1926 Number 12

A Happy New Year to All

Twelve months have rolled around since the challenge of 1926 was printed on the first page of the first number of "Co-operation" for the current year.

Four elements of responsibility for 1926 were stated to be:

Courtesy

Safety

Waste Elimination

Teamwork

We looked forward to the days of 1926 with enthusiasm and with firm conviction of the importance of the industry with which we are associated. We determined that the record for 1926 should be a creditable one. It has been a creditable one. We have made progress along these four lines. Our record during 1927 will be equally satisfactory if we meet its problems in the same spirit of confidence and enthusiasm.

To All 'L' Employees

THIS railway has an enviable reputation for the way in which it copes with the problem of snow removal from its tracks.

Based on the experience of previous winters, and particularly with the blizzards of 1926, new equipment has been provided and the snow fighting organization tightened up so that we may look forward with confidence to whatever comes during the first three months of 1927. As far as seems humanly possible we are prepared for every contingency. The rather severe snow fall of early December tested us out, and our men and machinery responded perfectly. There was practically no interference with service.

The management has kept pace with the development of snow-fighting equipment and has purchased some of the most modern apparatus on the market.

During 1926 we added to our equipment four snow sweepers, two Walter snow fighters, one large multiple-unit snow plow, four snow loaders, seven tractors and other miscellaneous equipment, all having a value of $150,000. The investment in all of our snow-fighting equipment amounts to over $600,000.

In addition to our own equipment we hire, during a heavy snow storm, other equipment having a value of approximately $700,000.

This closing message for 1926 is designed primarily to express the confidence of us all in our ability to maintain service in the face of formidable obstacles incident to winter. We have the organization and the equipment — with teamwork and a determination to overcome all difficulties we need have no fear of snow storms.

Edward Dana

PULVERIZED FUEL USED IN SOUTH BOSTON POWER STATION EXTENSION

Railway Is Investing a Half-Million Dollars to Improve Plant Efficiency and Give Increased Capacity

A NOTABLE improvement in the South Boston Power Station is now approaching completion. An extension to the boiler house has been built and this will house two boilers which are the largest on this property. They are being equipped with apparatus for pulverized coal and delivering it to the boiler furnaces under high air pressure. The erection is being done by the construction division of the department of power.

The magnitude of the extension will be realized when it is stated that the building construction involves 360 tons of structural steel, 175,000 brick and 200 cubic yards of concrete.

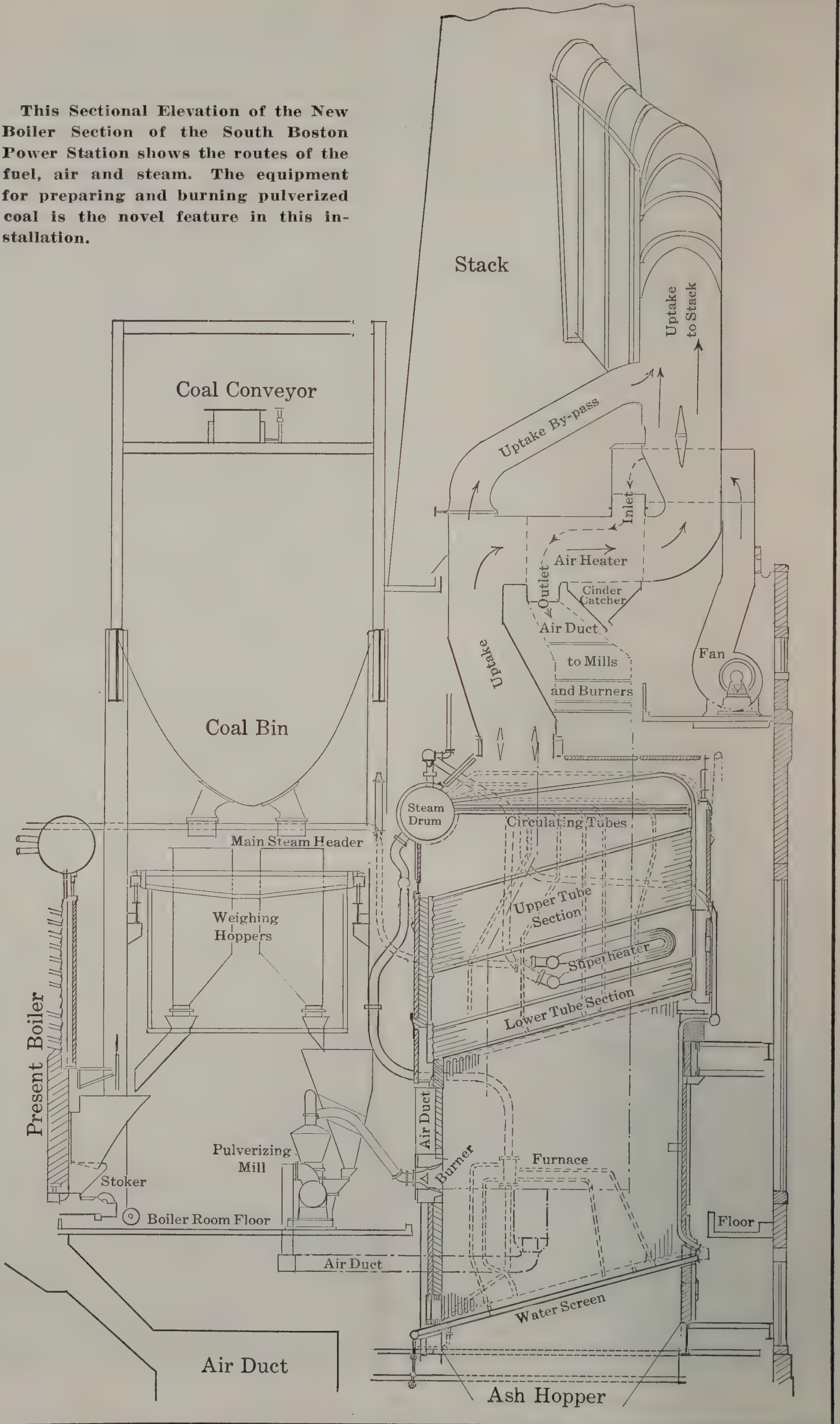
The accompanying illustrations have been prepared to show the important parts of the installation, and attention is directed particularly to the elevation in which these parts are designated by name. The construction views show the job as it appeared on Oct. 21.

Each of the two boilers has a nominal rating of 2075 horsepower. This rating simply means that the boiler will deliver a given quantity of steam under specified conditions. The fact is that when used in connection with the highly efficient steam turbines in this plant the two boilers could actually produce at least 40,000 electrical horsepower or 30,000 kilowatts. The boilers are designed for a pressure of 300 lb. per sq. in. but will be operated for the present at 200 lb. Each boiler is equipped with a superheater capable of heating the steam up to 200 deg. Fahr. above the temperature corresponding to the boiler pressure.

The chief feature of interest about the new equipment is the arrangement for burning pulverized fuel. In the firing aisle in front of the boilers are six pulverizing mills, three for each. These are supplied with coal by means of a travelling lorry which is filled

TWO GREAT BOILERS HAVE BEEN ADDED TO THE POWER PLANT AT SOUTH BOSTON

This Sectional Elevation of the New Boiler Section of the South Boston Power Station shows the routes of the fuel, air and steam. The equipment for preparing and burning pulverized coal is the novel feature in this installation.



from an overhead steel bin having a capacity of 15 tons per running foot.

In the mills the coal is pulverized to a fine flour and it is carried to the burners under the boilers by means of currents of warm air under pressure produced by rotary fans. This air is warmed in a heater, located above each boiler, through which the flue gases pass on their way to the stack.

The pulverized coal is burned in an enormous chamber under the boiler, which is surrounded by tubes containing water. A water screen at the bottom extracts heat from the fine ash that falls to the bottom of the combustion chamber.

The arrangement of three pulverizing mills to each boiler permits the supply of fuel to be varied efficiently, as any one or two or all of the mills can be operated at one time.

The new steel stack, which forms part of the improvement, is of the self-supporting type, that is, no guying is necessary. It stands 355 ft. above the ground and 271 ft. high above its base, and is supported on a concrete-encased structural steel frame above the boilers. Its internal diameter is 14 ft. 10 ins. but the flue diameter is less than this, due to the fact that the stack is brick lined.

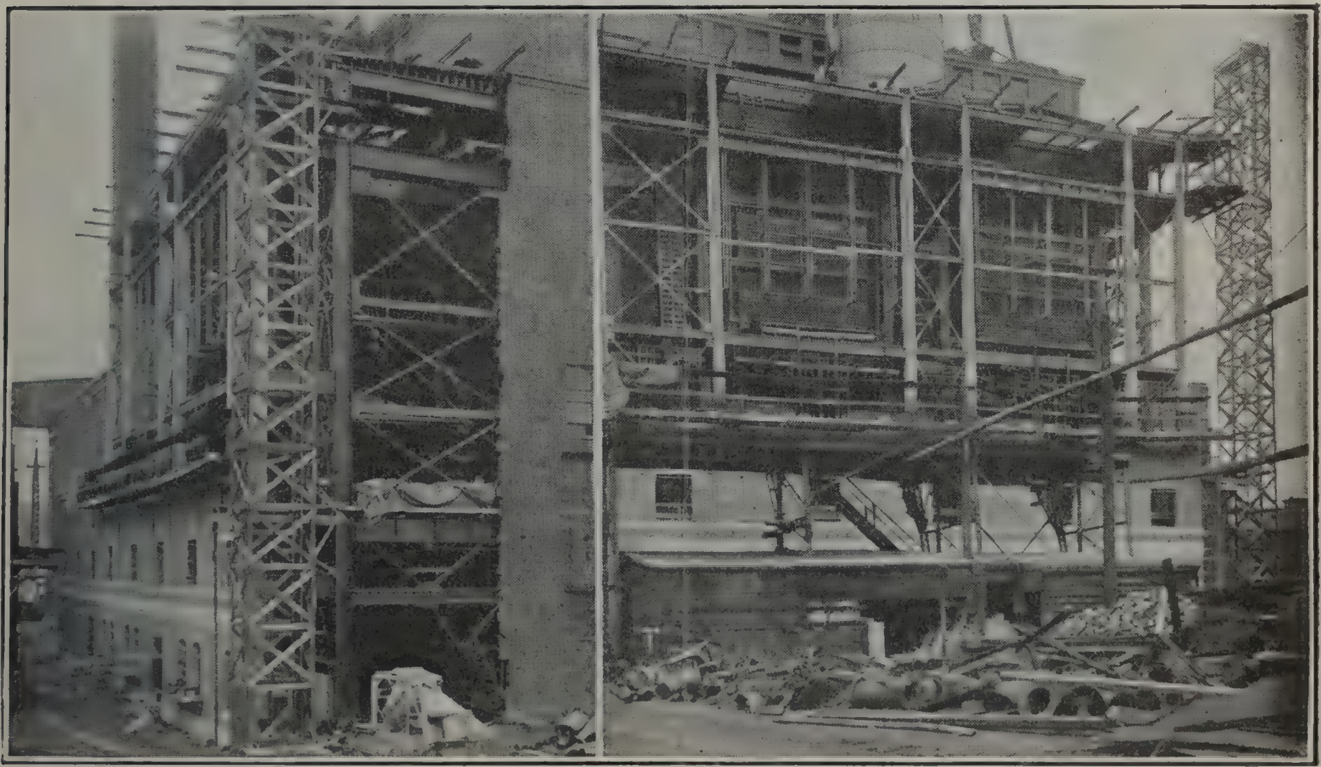
WINDOW WIPERS FOR NO. 5 "SEMI'S"

A safety measure of no small importance is the installation of window wipers on surface cars. The department of rolling-stock and shops has now enough wipers to equip all No. 5 semi-convertible cars. To Dec. 18 the following cars had been equipped:

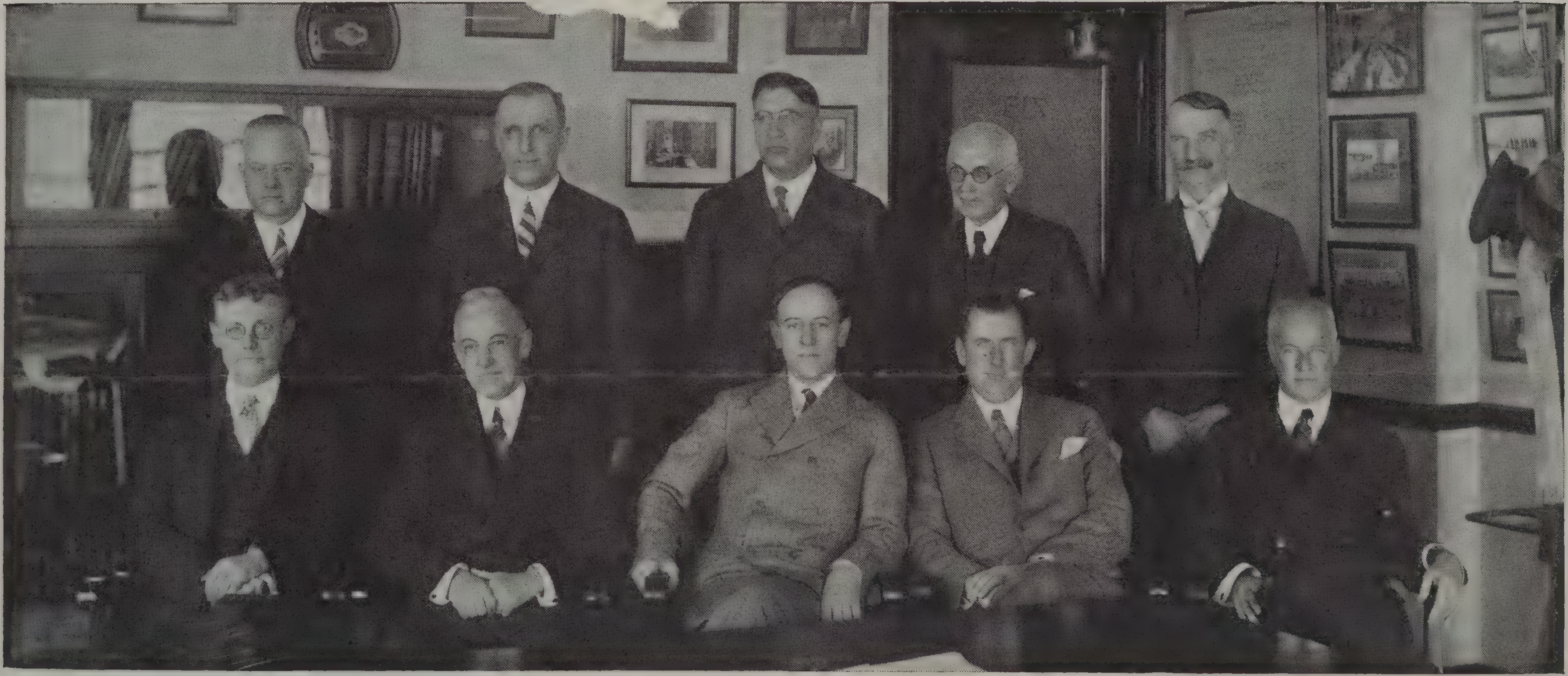
Carhouse	No. of Cars
Bennett St.	46
Clarendon Hill	56
Lotus Pl.	34
North Cambridge	2
Salem St.	2
Total	140

MARY'S CAR

Mary had a little car,
She drove to see the show,
And every time she tried to park
The copper made her go.
And every time she tried to go
The traffic made her stop—
She reached the theater just in time
To see the curtain drop.
Now Mary has a little car
That stays within a shed,
And Mary goes to shops and shows
In trolley cars instead.—Exchange.



THESE VIEWS GIVE CONSTRUCTION DETAILS OF THE NEW BOILERS



DEPARTMENT HEADS—BOSTON ELEVATED RAILWAY

Standing, left to right—H. M. Steward, superintendent of maintenance; F. S. Freeman, superintendent of power; John Lindall, superintendent of rolling-stock and shops; Edward Mahler, purchasing agent; James Smith, superintendent of transportation.

Sitting, left to right—H. Ware Barnum, general counsel; H. L. Wilson, treasurer; Edward Dana, general manager; J. H. Moran, general auditor; R. A. Sears, general claims attorney.

STREET CARS CAUSE COMPARATIVELY FEW DEATHS

The accompanying graphs are reproduced with permission from a copyrighted chart prepared by the American Abrasive Metals Company. With the co-operation of this company the data given in the original chart have been supplemented to make the record as complete as possible. The figures for the last year are not yet available.

The most striking thing about the diagram is the tremendous increase in deaths caused by automobiles. To be sure this is to be expected in part on account of the rapid increase in the number of these vehicles, but it is obvious that their operators have not yet conquered the accident situation.

The case is different with the electric railway. It is true that in numbers electric railway cars have not increased phenomenally during the past fifteen years as have automobiles. The United States Census reports show that in 1910 there were about 90,000 electric railway cars of all kinds, whereas the Electric Railway Journal states that in 1925 there were about 105,000 cars. But the number of deaths which they cause has been reduced to nearly one-half.

On the whole the accident situation seems to be in better control by electric railways than by other industries, as far as these charts show.

NEW PENSIONERS IN DECEMBER

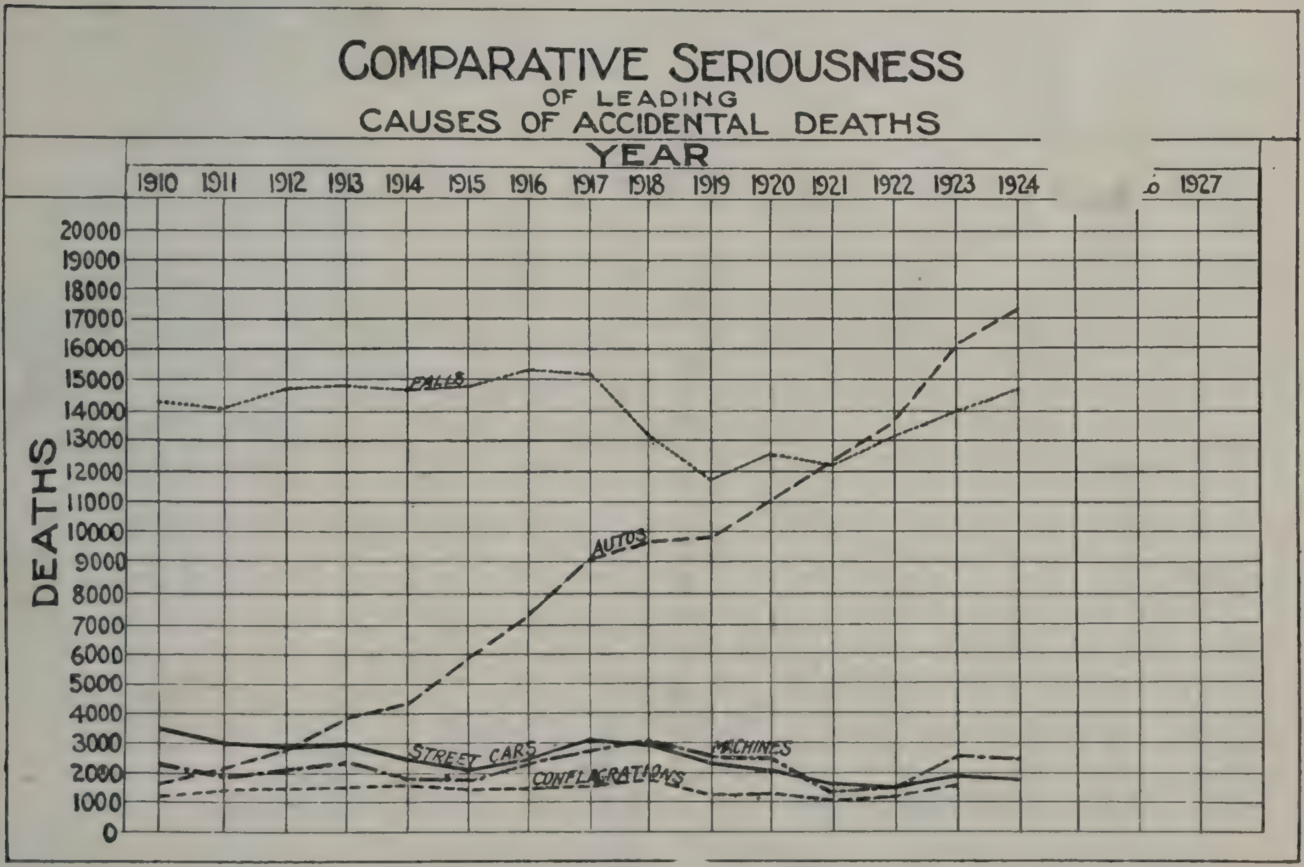
Ten men went on the pension list during the current month as follows:

Harry Carville, conductor, Div. 2.
D. S. McKenney, service-car helper.
J. J. Ring, warder, R. T. L.
Bernard W. Meehan, warder, R. T. L.
John G. Hoarty, operator, Div. 4.
James A. Mullin, starter, Div. 1.
F. W. Whitney, assistant starter, R. T. L.
James McMahon, tool wagonman.
Michael Shanney, paver, Central Division.
John M. Crafts, watchman, general yard.

IN MEMORIAM

Three pensioners passed away during December. Their names and former occupations were:

Michael Keefe, laborer.
Jas. A. Coffey, inspector, Div. 1.
Bernard Mulhern, warder, R. T. L.



THE HEAVY LINE SHOWS STREET RAILWAY CASUALTIES AS COMPARED WITH OTHER IMPORTANT CAUSES OF ACCIDENTAL DEATH.

MORE GOOD ANSWERS FROM THE ACCIDENT-PREVENTION EXAMINATION

IN the accident-prevention examination, referred to in three preceding issues of this paper, the following question occurred: "Should you endeavor to secure as witnesses to an accident employees of the Railway or persons who are not so employed? Give your reasons." The following answers show who should be secured as witnesses and give some very good reasons for the selection:

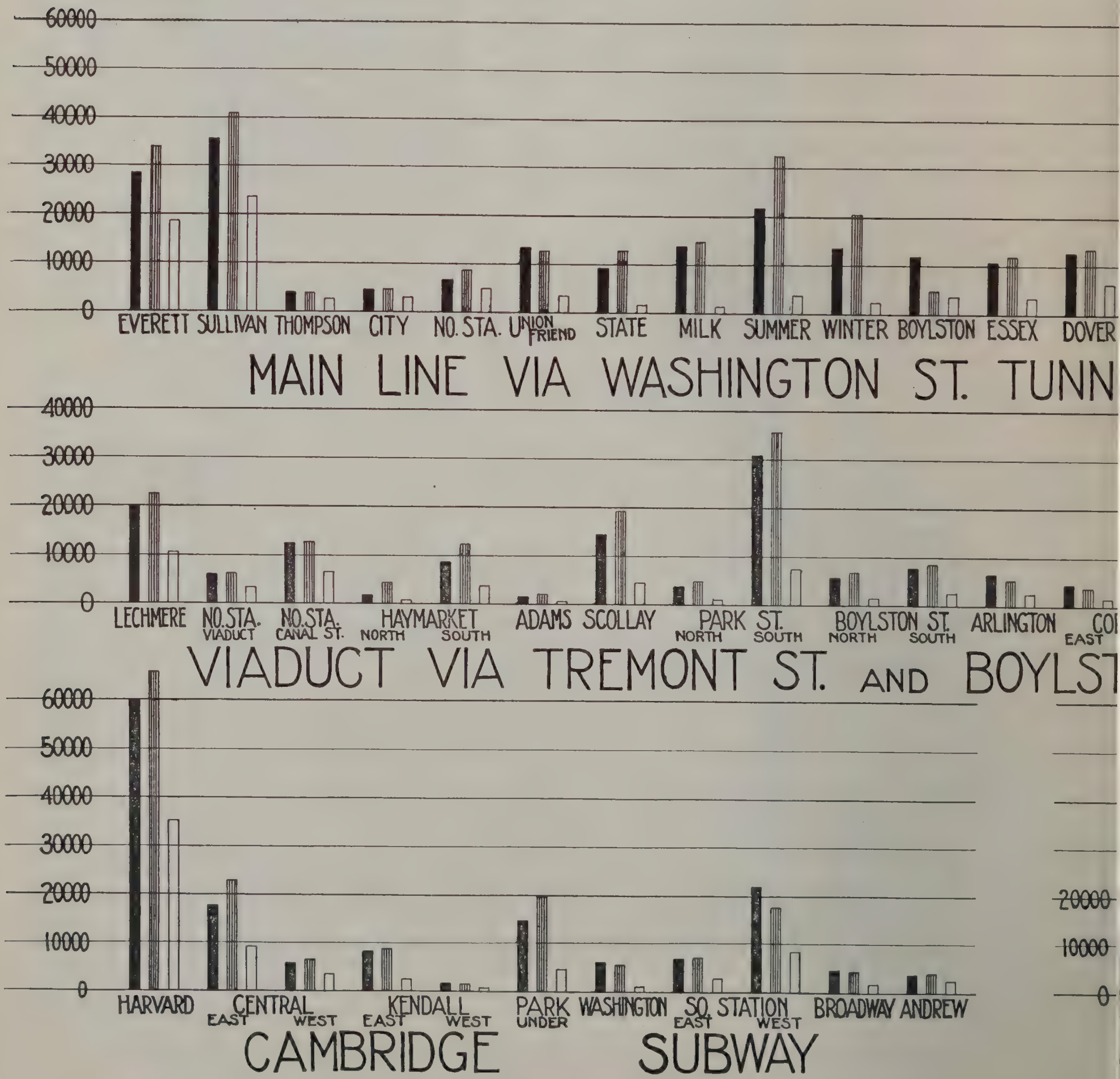
"Obtain as many witnesses as possible no matter where they are employed."

"It is essential to get as many witnesses as possible whether or not they are employees of the Railway."

"I would obtain the names of employees and others; disinterested parties, because they make a better impression in court, and employees because outsiders sometimes give false addresses."

"Obtain every one near or present. Railway employees, sure, because they are good witnesses as they may have had experience before and had nothing to do but observe just what took place at time of accident."

VOLUME OF TRAFFIC AT RAPID-TRAN



"I would endeavor to get both, but persons not in the employ of the Railway make the best witnesses, because in the eyes of the law they are disinterested witnesses, and their testimony carries greater weight with a jury."

"I try to get all that were witnesses to an accident, so that the Railway can have enough witnesses to pick from. I try to get non-employees first, as they do not understand the system, and a court likes a non-employee witness.

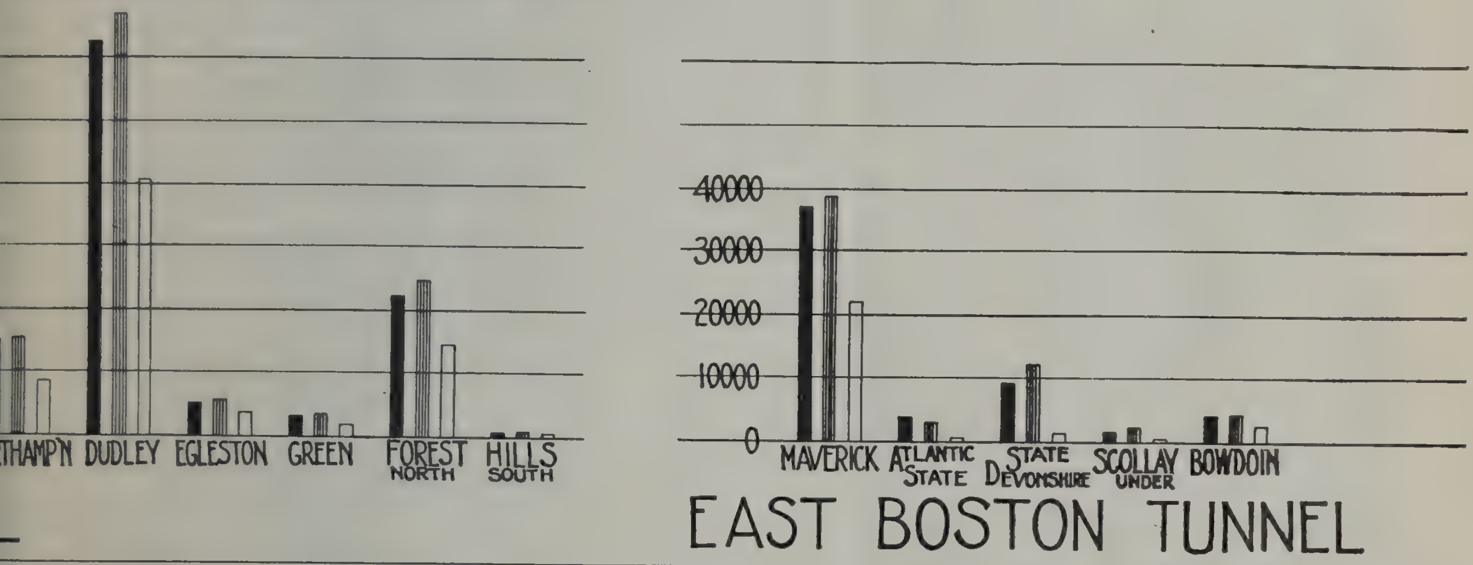
"The best witnesses are persons not connected in any way with the Railway. This type of witness is considered as neutral if the case should come before a judge or jury."

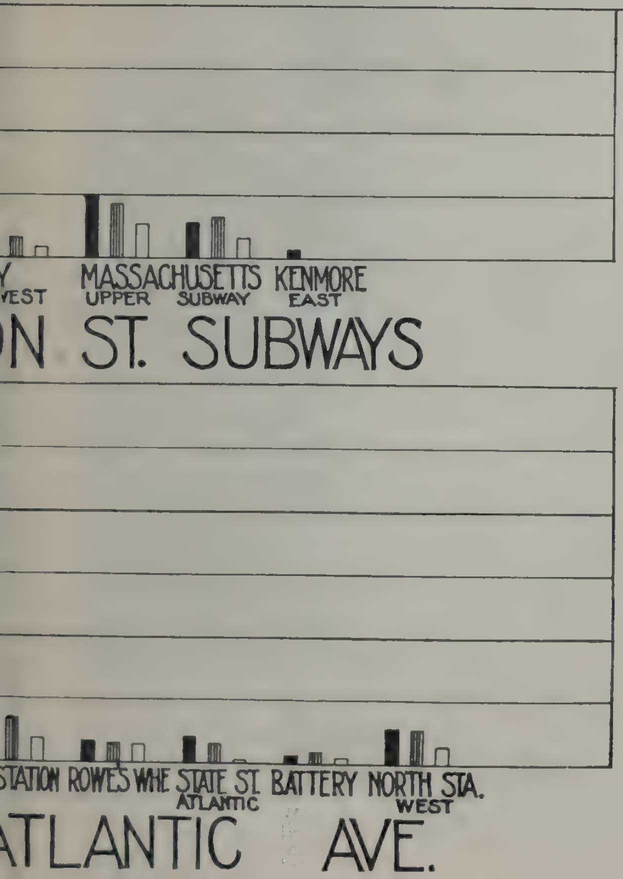
"Disinterested persons, for in court their evidence has more weight with the jury. The jury would look at it as they were not employed by the Railway they were at liberty to tell how the accident happened as they saw it, and if their evidence corresponds with the motorman's it strengthens his testimony."

WHAT THE RULES SAY ON THIS POINT

The rules cover this matter fully, as follows: Rules 66 (b) "The conductor or operator must obtain the names and addresses in full of all witnesses on or near the car when the accident occurred, including the badge number of any policeman, fireman, private officer, postman or uniformed employee of the Railway. In case of car collision or defect within car, street witnesses need not be taken. Even though passengers claim no knowledge of accident their names must be obtained."

STATIONS ON TYPICAL WINTER DAYS





WHY HAVE MORE THAN ONE TIMETABLE?

The accompanying diagram shows the volume of traffic at the rapid-transit stations for the typical week-day, Saturday and Sunday riding. The black band represents to scale the week-day traffic, the shaded band the Saturday traffic, and the white band the Sunday traffic. The use of the same scale throughout permits comparison of the traffic for the three days and for the heavy and light traffic points.

The figures were obtained from actual passimeter and fare-box readings and show at a glance why the same time-table cannot be used for the three days. It is interesting to note that at almost every point Saturday traffic is heaviest. This is due to the existence of the noon peak on that day, as well as the morning and evening rush hours of the week-day traffic.

The preparation of charts of this sort permits economical adjustment of service to requirements.

BOSTON ELEVATED MUSICAL CLUB IN "BREEZIN' ALONG"

WHAT YOU SHOULD KNOW ABOUT NATIONAL BANKS*

Relation of These Banks to the Federal Reserve System Is Explained. Answers to Questions Contain Much Supplementary Information

IN the course in investing savings, held last year as part of the educational program, an address was delivered on March 15 by Charles Hall, assistant manager Kenmore Branch National Shawmut Bank of Boston, on the subject of "National Banks." Some high spots of his address are as follows:

LOOKING BACKWARD

In 1791 Alexander Hamilton, first Secretary of the Treasury, was responsible for the establishment of the first Bank of the United States. It was successful but aroused political antagonism and Congress, in 1811, refused to renew its charter.

The second Bank of the United States was organized later and paid Congress a million and a half dollars for its franchise. This bank also went out of business, in 1836, because of political opposition. This bank was later granted a charter by the state of Pennsylvania, but the bank failed in 1841.

In the meantime state banks were springing up all over the country and much experience was gained as to how not to run a bank. A bank of a successful type was started here in Boston and was known as the Suffolk Bank. It was incorporated in 1818. Banks associated with it made deposits for the redemption of their notes, and the country banks which at first refused to join were finally forced to yield. This bank redeemed notes of other banks, charged them to the accounts on its own books and returned them. The system showed the good effects of prompt redemption and influenced later legislation.

Government funds were for a time kept in the second Bank of the United States but during the panic of 1837, resulting in suspension of payments, the government was much embarrassed. As a result Congress established an independent treasury in 1846. In 1920 the work of the independent treasury was transferred to the Federal Reserve Bank.

National banks originated in 1863 and 1864, under the provision of the National Bank Act. The primary purpose of this Act was to prevent depreciation of United States bank notes or greenbacks due to loss of gold and silver from circulation following the outbreak of the Civil War.

The national banks also furnished a market for United States bonds, as these banks were required to buy such bonds as a basis for note circulation. But, following an act of Congress passed in 1865, imposing a federal tax of 10 per cent on issues other than national bank notes, state bank notes were forced out of circulation. Thence, until the establishment of the Federal Reserve Bank, the government had a monopoly in the issuing of bank notes.

ESTABLISHING A NATIONAL BANK

The Comptroller of the Currency is responsible for seeing that persons desir-

BOSTON ELEVATED RAILWAY COMMITTEE ON EDUCATION 1926-27

Standing, left to right:. F. L. Sennott, inspector transportation department; J. M. Patten, foreman truck shop; Edward Dana, general manager; David F. Lee, claims department; John R. Cashman, purchasing department; E. L. Lockman, assistant engineer surface lines.

Sitting, left to right: J. Walter Allen, electrical engineer power department; John F. Kelly, auditing department; Irving Pratt, cashier treasury department; Miss E. M. Johnson, secretary to general manager; C. B. Gleason, attorney; H. H. Norris, educational advisor.

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*Fourth in a series of abstracts from address in the course in "Investing Savings," L. J. Dickey, chairman.

ing to form a national bank pay in the required money as capital, the amount depending upon the size of its home city. The bank must join the Federal Reserve System and buy stock in the Federal Bank up to 3 per cent of its capital and surplus. The law provides for an assessment up to 6 per cent, but only 3 per cent has been called.

The national bank may issue bank notes up to its full capital, by a corresponding pledge of United States bonds deposited in the national treasury. The government guarantees the redemption of these notes. The stockholders are liable for twice the par value of their stock. A national bank may loan one-quarter of its capital and surplus, or one-third of its saving and time deposits on real estate. A bank may own its own building but can only hold other items of real estate for five years.

BANK STATEMENTS

A bank statement shows resources and liabilities. Loans and discounts are resources. Banks will loan on good stocks and bonds within about 80 per cent of their value on a note. The collateral note gives the bank permission to sell the stock if necessary.

United States government securities form another resource, these being bought to secure circulation. The bonds are deposited with the Treasurer of the United States to secure national bank currency.

A national bank must also retain a daily regular reserve of 10 per cent of its commercial or checking deposits and 3 per cent on savings deposits.

Another bank resource is funds in process of collection.

OPERATION OF CLEARING HOUSE

The checks which we receive each day on other Boston banks are separated into packages and at 10 a. m. our messenger takes them to the clearing house. The packages of the different banks against us are also listed there and the result shows the gain or loss on the day's clearing.

LIABILITIES OF NATIONAL BANKS

The first liability is the capital stock, each share being $100 fully paid in. Surplus is another, being an accumulation of earnings voted by the directors to the surplus account from undivided profits.

Still another liability is notes in circulation, secured by government bonds. Next comes the amount due Federal Reserve Banks, state banks, bankers, trust companies and foreign banks. There are other miscellaneous liabilities including unpaid dividends, demand deposits, certified checks outstanding, etc.

MR. HALL'S ANSWERS TO QUESTIONS

Mr. Hall answered a number of questions, including the following:

QUESTION: Under what conditions will national banks loan money without security?

ANSWER: It is all done on character, "with restrictions," one of the three C's of credit—character, capital and capacity.

QUESTION: Are unsecured loans small in amount?

ANSWER: No, they are at least heavier than the secured loans.

QUESTION: To secure a loan on stocks and bonds is the borrower required to be a depositor in the bank?

ANSWER: Not necessarily, but the bank needs to know something about the borrower, because he might try to borrow on bonds which he had found, for example.

QUESTION: What is meant by non-member banks, are not all national banks required to belong to the Federal Reserve System?

ANSWER: Yes, but banks other than national banks are not.

QUESTION: Does the Federal Reserve System confine itself to national banks?

ANSWER: No, any state bank, organized, say, in New England, except a part of Connecticut, can be a member of the Boston District if its assets and securities are satisfactory after examination.

QUESTION: What business can a trust company do that a national bank cannot do?

ANSWER: Well, it can loan on real estate up to 60 per cent of the valuation, for one thing National banks can loan but 50 per cent of valuation.

QUESTION: Do national banks exist regardless of state laws?

ANSWER: Yes, the state law has nothing to do with a national bank. It is interesting to note, however, that when the Comptroller of the Currency calls for reports on the condition of national banks the state commissioners call for statements of the condition of trust companies on the same day.

QUESTION: Do I understand that national banks have wider latitude in their savings departments than do savings banks?

ANSWER: Yes, there is no limit to the amount in one account or in a joint account.

QUESTION: How about bank stock as an investment?

ANSWER: Very good, although there is the double-liability clause. Then you must know the bank.

Question: Was the establishment of the Federal Reserve Bank a good thing for the country as a whole?

Answer: Yes. I do not know what we should have done without it during the World War.

Question: Has it come to stay?

Answer: It has, although there has been some sectional objection to it. The system furnishes a reservoir permitting money to flow from one bank to another as needed. Although many members of the American Bankers' Association did not favor the system at first, other members did support it against an organized campaign to do away with it.

Question: What are the advantages in having a bank act as trustee of an estate rather than an individual?

Answer: The life of an individual trustee or executor is limited, whereas a bank has practically a perpetual charter, and there are few cases where the charter has lapsed.

NEW BUS ROUTES

Three new bus routes were licensed and put into operation during the past few weeks, all serving territory not previously supplied with our service.

Route 4246—From Lebanon and Sylvan Streets to Malden Square, via Sylvan, Forest and Main Streets. This route serves a territory north of Malden Square in the Forestdale section of Malden. It is a feeder for the Lebanan Street line and for routes passing through Malden Square.

Route 4245—From Medford Square to Fellsway and Elm Street, via Forest Street. The area north of Medford and west of Fellsway is served by this route. It connects with all Medford Square routes and with the Fellsway routes at its outer end.

Route 2520—From Boylston and Hammond Streets, Brookline, to Grove and South Streets, Brookline, via Hammond, Newton and Grove Streets. This route serves a new and rapidly developing residential section of Brookline. It connects at Boylston and Hammond Streets with the Chestnut Hill-Huntington Avenue-Park Street route.

"BREEZIN' ALONG" PLEASES

Large audiences greeted the Boston Elevated Musical Club on the occasion of the presentation of its annual musical comedy, Dec. 15 and 16, in Symphony Hall. The comedy, by Eugene L. McDonald and James Brownlie, was billed as a musical "hodge podge." It concerns the loves and fortunes of Jack Mason, played by Frank G. Power. Mason, already a millionaire, has been left a large fortune by an uncle but there is a clause in the will that says he must get rid of his own fortune before he can inherit his uncle's. Complications follow which carry the players from Long Island to New York City and back again.

Tommy McNab as Joe Long, a reporter from the "Daily Applesauce," was a "demon" on the trail of news. He was ably assisted by his fellow newshound, Pete Short, in the person of Harold L. O'Neil. Tom Moore played the part of the Mason's butler, and sang several songs that were well received. Frank Riley and Pat Hyland sang a duet of "Moonlight and Roses" which brought the house down.

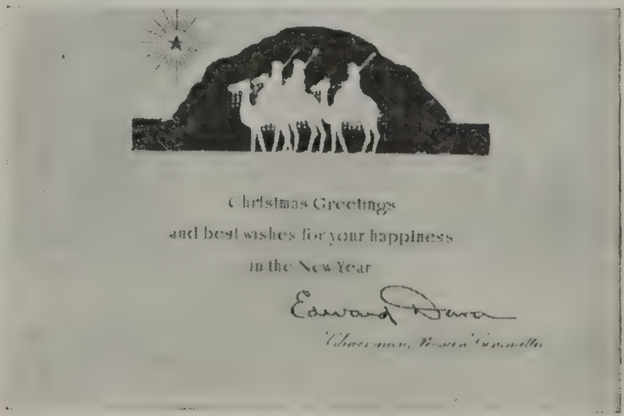
The general committee in charge comprised a large group of employees under the leadership of Superintendent James Smith, honorary chairman, and H. L. O'Neil, chairman. Wm. Carney was chairman of the ticket committee; W. J. Timmins, chairman of the advertising and publicity committee; Joseph A. Griffin was in charge of hall and ushers, and Everett A. Kelley was stage manager.

This was the third and most successful of the shows presented by the club since its organization by Arthur C. Eaton, the president.

CO-OPERATION

By D. H. Willett, Department of Accounts

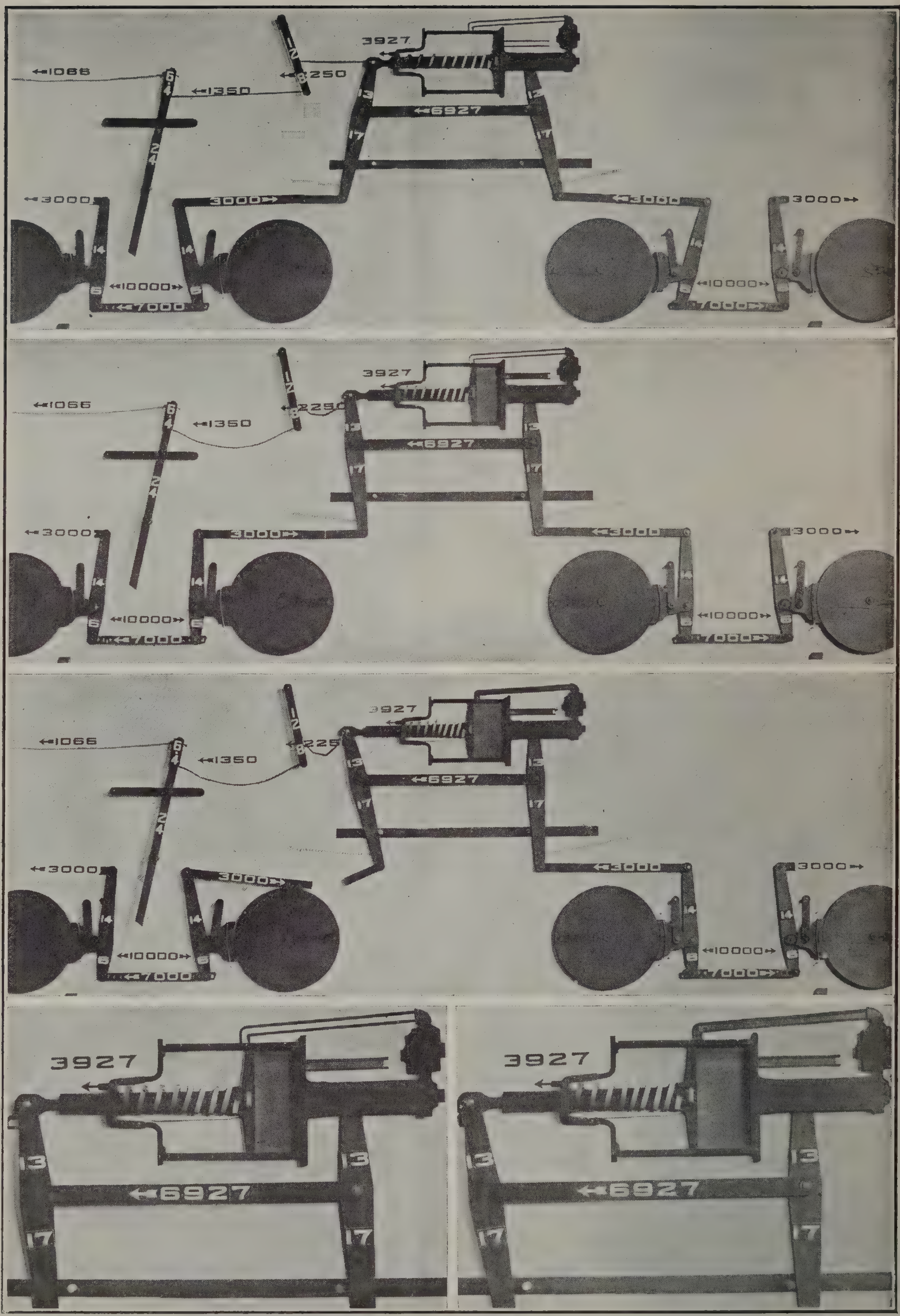
"Safety First" is a good proposition,
"Watch Your Step" is another I say;
But co-operation placed both in position,
For the publicity they have today.



Christmas Greetings
and best wishes for your happiness
in the New Year

Edward Dana
[illegible]

The General Manager's Greeting to Pensioners



MODEL OF DOUBLE-TRUCK CAR BRAKE RIGGING
Top, Brakes Released. Next, Normal Brake Application. Next, Broken-Brake-Rod Application. Bottom, Left, Close-up with Normal Application. Bottom, Right, Slack Adjuster in Action

BRAKE RIGGING OF AN ELECTRIC CAR

At the rolling-stock and shops department group conference held on Dec. 3, 1926, E. P. Locke, engineer of car construction, gave the principles upon which brake rigging operates. With the aid of the working model illustrated on the opposite page, he demonstrated the working of the equipment under normal and abnormal conditions. He explained how the forces are transmitted from the brake cylinder or hand-brake spindle to the brake shoes through a system of levers. Also he made calculations of the forces which exist in the several parts of the brake system.

Of particular interest was the manner in which the braking force is distributed evenly from the brake-cylinder piston to all of the brake shoes.

With the aid of the model, Mr. Locke showed what happens when a brake rod breaks, one truck being still available for braking purposes on a double-truck car.

Another feature was the automatic slack adjuster. With this device air is admitted through a small port in the side of the brake cylinder to a tiny auxiliary cylinder whenever the piston travels beyond its normal position with brakes applied. This little cylinder operates a ratchet and screw, a small amount with each brake application, until the slack is removed. Several brake applications are necessary for this purpose.

All of this is clearly shown in the model.

Mr. Locke will demonstrate this model again at the transportation department group conference to be held at Sullivan Square on Friday morning at 10:30 and Friday evening at 7:30, Jan. 7. Any employee of the railway interested in brakes is invited to attend.

MR. REYNOLD'S "DAILY DOZEN"

The first general meeting in the winter's educational program was held at Sullivan Square, Dec. 21, the general manager presiding.

John J. Reynolds, claims attorney, gave an address on "Co-operation," his advertised title being, "Why we have such good teamwork on the Boston Elevated."

By vote of the audience, the general manager was requested to include in an early issue of "Co-operation" a dozen questions with which Mr. Reynolds concluded his paper. These were suggested to him by Walter Camp's "Daily Dozen" exercises and by the "Daily Dozen for Electric Railways," prepared by L. S. Storrs, managing director of the American Electric Railway Association. (Several of Mr. Storr's "Daily Dozen" were reprinted in the current volume of "Co-operation.") Mr. Reynolds' questions follow:

1. What portion of the time that is under your own control do you actually spend (a) in study for personal improvement, (b) in studying ways and means which may benefit this railway?
2. Are you lazier or more industrious than you were a year ago?
3. Are your eyes less keen than a year ago to detect in your work those errors which others are able to point out?
4. Do you think for yourself and not let the opinions of others unduly influence you?
5. Are you growing in self-control, or do you find it increasingly difficult to stick to a course of action you have marked out?
6. Do you make it a rule not to quarrel about petty things?
7. Do you control your temper and not "fly off the handle" when things go wrong?
8. Are you patient when dealing with people who are hard to please?
9. Are you able to express your own ideas without causing others to feel that you are overbearing and narrow-minded?
10. Can you meet opposition without becoming confused and saying things you wish afterwards you had not said?
11. Have you ever been selected to take charge of a group of dissatisfied men because of your ability to handle men?
12. Are you man or woman enough to set about correcting your weaknesses and supplying your lacks in spite of discouragements and keep on keeping on until you have completely attained the best that is in you?

In addition to Mr. Reynold's address, the general meeting program comprised two songs by Garfield Stone, of the purchasing department, a motion picture of Lieut. Byrd's trip to the North Pole and one of the ever-popular "Aesop's Fables."

CHANGES IN THE RESERVE FUND

Fiscal Year 1925-26

July 1, 1925, $1,000,000

July	$249,477.93*	Jan.	$223,301.90†
Aug.	367,593.94*	Feb.	185,989.63*
Sept.	176,763.97*	Mar.	161,772.65†
Oct.	117,703.96†	April	77,031.69†
Nov.	45,265.00†	May	57,010.06†
Dec.	289,347.71†	June	1,662.18*

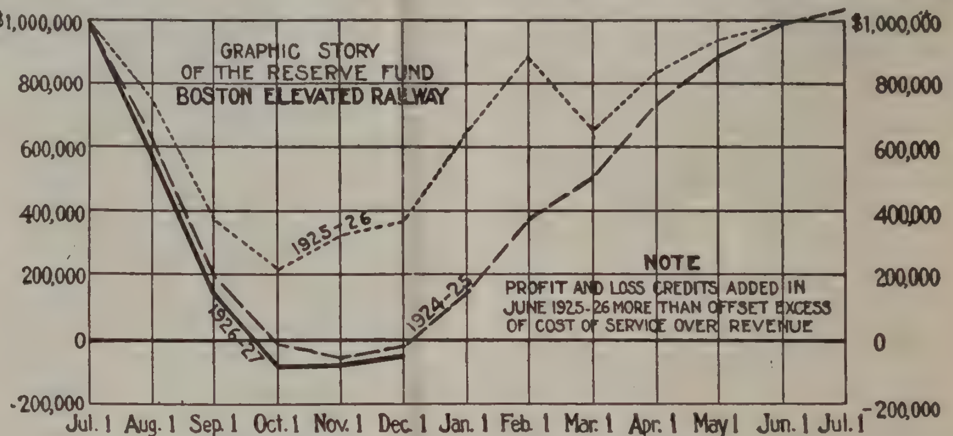
Profit and loss credit.....$32,359.07

Fiscal Year 1926-27

July 1, 1926, $1,000,000

July	$393,028.41*
Aug.	451,546.79*
Sept.	236,543.80*
Oct.	2,723.19†
Nov.	29,302.22†

†Excess of revenue over cost of service. *Excess of cost of service over revenue



NOVEMBER OPERATION

GENERAL FINANCIAL DATA	1926	1925
Revenue exceeded cost of service	$29,302.22	$45,265.00
Operating revenue per car-hour (A. E. R. A. std.)	$6.06	$6.11
Operating revenue per car-mile operated	62.06c	63.69c
Average fare per revenue passenger	9.259c	9.272c
Ratio operating expense to operating revenue	71.97%	70.98%
PASSENGERS CARRIED		
Revenue passengers	31,694,487	30,898,140
Per cent 5c and 6c passengers	17.99%	17.62%
Revenue passengers per car-mile operated	6.501	6.732
OPERATING FACTS		
Trips operated	628,592	594,849
Car-miles operated:		
Rapid-transit lines	1,304,952	1,214,387
Surface, two-man	1,894,907	1,990,958
Surface, one-man	1,228,751	1,112,001
Express, newspaper and sprinkler cars	550	6,773
Motor bus	445,850	265,734
Total miles operated	4,875,010	4,589,853
ACCIDENT DATA		
Accidents per 10,000 car-miles	2.12*	2.11*
Accidents per 10,000 bus-miles	4.7	5.5
Revenue passengers carried per accident	33,753	31,561
Average number of witnesses per accident	3.33	3.51
COMPLAINTS AND DEFECTS		
Complaints in regard to car service	22	19
Employees complained of by car riders	100	83
Car defects reported per 10,000 car-miles	4.1	4.7
INFORMATION ABOUT POWER		
D.c. kw.-hr. output gross for month	22,194,650	21,992,940
Maximum kw. load	78,200	79,860
Tons of coal consumed for power	18,896	18,431
Lbs. of coal for power per d.c. kw.-hr. at cars	1.912	1.883
Operating and maintenance cost of power, including depreciation:		
Per d.c. kw.-hr. for car service	0.96c	0.97c
Per revenue car-mile	4.45c	4.61c
Kw.-hr. per revenue car-mile	4.630	4.741

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*This does not include miscellaneous accidents.

December 24, 1926.

EDWARD DANA, *General Manager.*

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